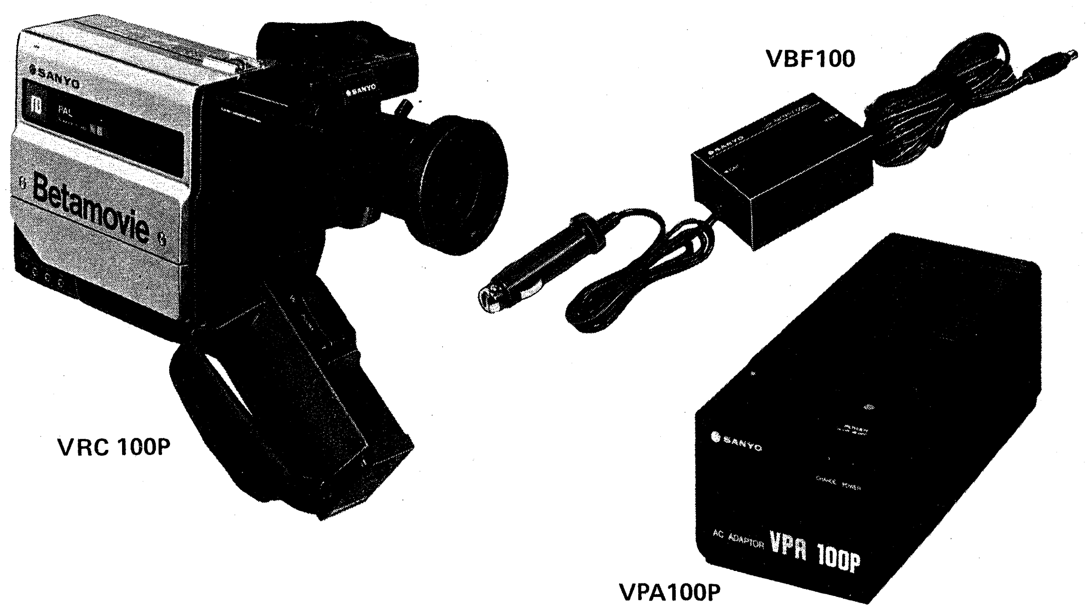
SERVICE MANUAL

SANYO

Betamovie
AC Power Adaptor
Car Buttery Cord

VRC 100P (PAL)
VPA 100P
VBF 100

Beta
β



SPECIFICATIONS

System

Video recording system	Rotary double-azimuth single-head, Helical scanning
Usable cassettes	Cassettes having the mark β
Tape speed	18.73 mm/sec.
Maximum recording time	3 hours 35 min. (with L-830 video cassette)
Audio frequency response	50–8,000 Hz (using an external microphone)
Pickup tube	1/2-inch SMF Trinicon tube
Lens	Combined 6x power zoom lens f9 mm (F1.2)–54 mm (F1.4) with macro Filter diameter: 52 mm
Colour temperature selector	Built-in 2-step filter (3200°K/5500°K)
Minimum illumination	28 lux
Illumination range	28 lux to 100,000 lux (2.6 to 9294 footcandles), automatic sensitivity and iris

Inputs and outputs

DC IN 9.6 V jack	9.6 V dc
EARPHONE jack	Minijack, −26 dBs, 8-ohm impedance
REMOTE jack	Minijack
MIC jack	Minijack, −65 dBs, Low impedance

General

Power requirements	9.6 V dc
Power consumption	9.0 W
Operating temperature	0°C to 40°C (32°F to 104°F)
Dimensions	Approx. 125 × 220 × 357 mm (w/h/d) (5 × 8 3/4 × 14 1/8 inches) when packed
Weight	2.5 kg (5 lb 8 oz) Betamovie only
Viewfinder	TTL optical system, Eyesight correction adjustable (+2 – −4 DP)
Microphone	Built-in electret condenser mic

WM-11233

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SANYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SANYO. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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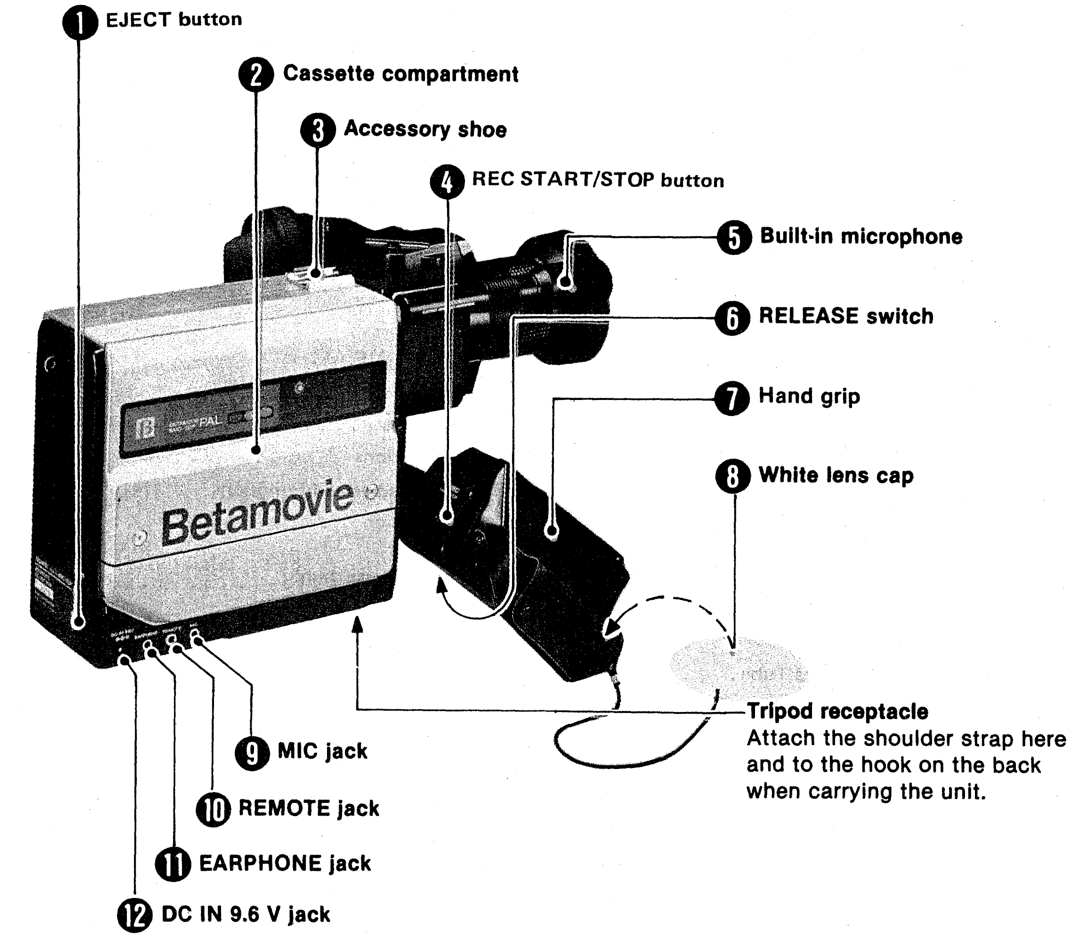
SECTION 1

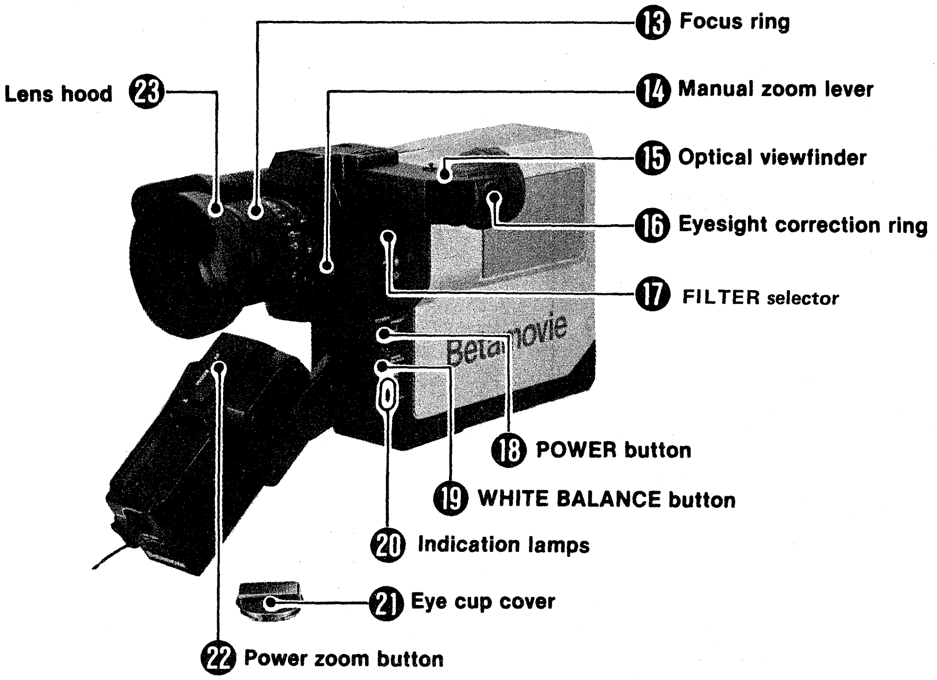
OUTLINE

1-1. LOCATION AND FUNCTION OF PARTS AND CONTROLS



① EJECT button
② Cassette compartment
③ Accessory shoe
④ REC START/STOP button
⑤ Built-in microphone
⑥ RELEASE switch
⑦ Hand grip
⑧ White lens cap
Tripod receptacle
⑨ MIC jack
⑩ REMOTE jack
⑪ EARPHONE jack
⑫ DC IN 9.6 V jack

Attach the shoulder strap here and to the hook on the back when carrying the unit.



⑬ Focus ring
Lens hood ㉓
⑭ Manual zoom lever
⑮ Optical viewfinder
⑯ Eyesight correction ring
⑰ FILTER selector
⑱ POWER button
⑲ WHITE BALANCE button
⑳ Indication lamps
㉑ Eye cup cover
㉒ Power zoom button

❶ EJECT button
Slide down to open the cassette compartment. (p. 9)
The button does not operate when the power is not supplied or the battery power is exhausted.

❷ Cassette compartment
Insert the cassette here. (p. 6)
If a cassette is not loaded, no function except the EJECT button will work.

❸ Accessory shoe
For attachment of an external microphone.

❹ REC START/STOP button
Press to start recording, press again to stop. (p. 8)

❺ Built-in microphone
Sound is recorded simultaneously with video taping.

❻ RELEASE switch
Slide to unlock the hand grip. Hand grip angle can be set in one of three positions. (p. 7)

❼ Hand grip
Comfortable grip that also holds the battery pack. (p. 6)

❽ White lens cap
Snap onto the hand grip belt when shooting. Place on the lens hood when the unit is not in use, or to adjust the white balance.

❾ MIC jack
For connection of an external microphone. The built-in microphone is automatically disconnected.

❿ REMOTE jack
For connection of an optional Betamovie Commander to control the unit from a distance.

⓫ EARPHONE jack
For connection of the supplied earphone to monitor the sound being recorded. (p. 8)

⓬ DC IN 9.6 V jack
For connection of an ac power adaptor or car battery cord. The internal battery power is automatically disconnected.

⓭ Focus ring
Turn the ring to focus while looking through the viewfinder. (p. 12, 15)

⓮ Manual zoom lever
Use the zoom lever to turn the zoom ring manually between W(wide-angle) and T(telephoto) positions.
For close-ups, turn the knob of the lever in the direction of arrow, then turn the lever counterclockwise until the ring is in the MACRO position.

⓯ Optical viewfinder
Place your right eye here so that the lens' full field of view can be seen.
It is possible to focus the lens with the power off. The letter lamps inside the viewfinder indicate all the information necessary for operation.

W: Lights steady when the white balance needs adjustment. (p. 10, 11)
Blinks during adjustment.
T: same as the TAPE/BATT indication lamp. (item ⓴)
C: same as the CAUTION indication lamp. (item ⓴).
L: Lights when the light level is too low. (p. 10)

⓰ Eyesight correction ring
Adjust to your eyesight to assure good focus. (p. 12)

Be sure to adjust when shooting for the first time.

⓱ FILTER selector
Set to the proper position in accordance with prevailing light conditions. (p. 10)
☼: Sunlight (outdoors or indoors)
💡: Incandescent lamps, fluorescent lamps or photo-flood lamps (indoors)

⓲ POWER button
Press to adjust the white balance or to set the standby mode for immediate recording starts. (p. 9) The STANDBY lamp will light.
Press again and the lamp goes off.

⓳ WHITE BALANCE button
Press to adjust the white balance with the white lens cap on, after setting the FILTER selector. (p. 10, 11)

⓴ Indication lamps
TAPE/BATT : Lights steady when the tape is running.
Blinks when the battery is exhausted. Replace the battery pack.
DEW : Lights when moisture has condensed inside the unit. Eject the cassette and let the Betamovie sit until the moisture evaporates. The unit can be used again if the light does not come on when the cassette is reinserted.
CAUTION : Blinks when the video head becomes clogged or dirty. Clean the video head with a SANYO L5C video head cleaning cassette.
Lights steady when the unit is out of order. Contact the nearest SANYO dealer or local SANYO service facility.

㉑ Eye cup cover
Attach to the viewfinder eye cup when remotely controlling the unit.
Attach to the shoulder strap when not in use.

㉒ Power zoom button
Press for smooth power zooming between the W(wide-angle) and T(telephoto) positions.

㉓ Lens hood
Usually attached to the Betamovie. Remove when shooting close-ups or using an optional filter. (p. 13)

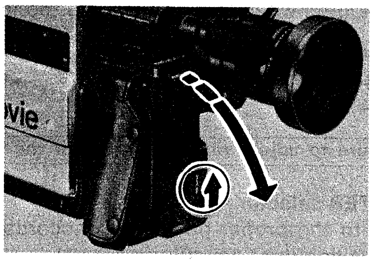
1-2. RECORDING

Operation is easy and practice shooting will help you to become familiar with the procedures.

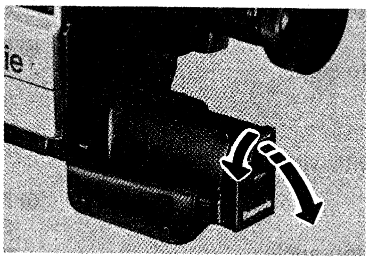
Preparations

1 Install a charged battery pack, NP-11.

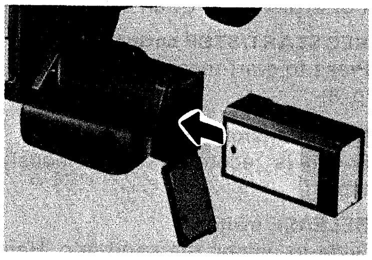
❶ Slide the RELEASE switch up to bring down the hand grip.



❷ Turn the BATTERY knob to OPEN, and open the lid.

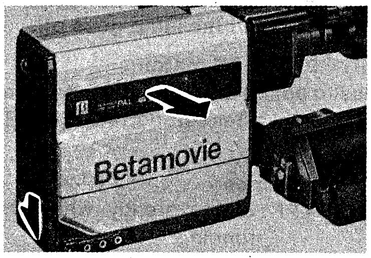


❸ Insert a battery, close the lid and turn the knob to CLOSE.

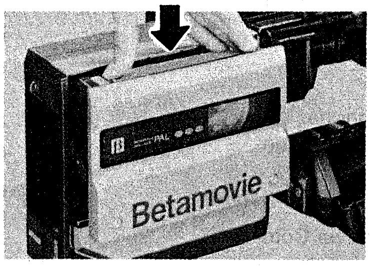


2 Install a cassette (with the safety tab).

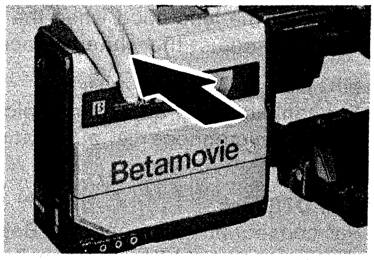
❶ Slide the EJECT button down to pop up the compartment lid.



❷ Insert a cassette with the round window to the right and push down to settle.

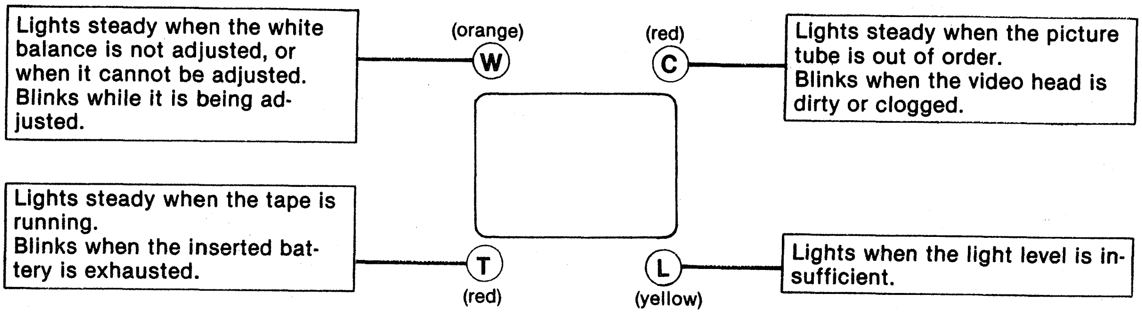


❸ Press the left side of the compartment lid to close.



The letter lamps inside the viewfinder

The lamps blink or light steady to indicate all the information necessary for operation.



Lights steady when the white balance is not adjusted, or when it cannot be adjusted. Blinks while it is being adjusted.

Lights steady when the picture tube is out of order. Blinks when the video head is dirty or clogged.

Lights steady when the tape is running. Blinks when the inserted battery is exhausted.

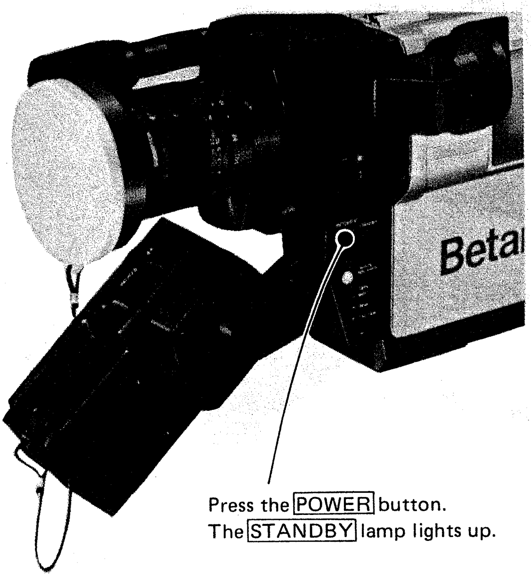
Lights when the light level is insufficient.

All the lamps light up at first when the POWER or REC START/STOP button is pressed.

Operation

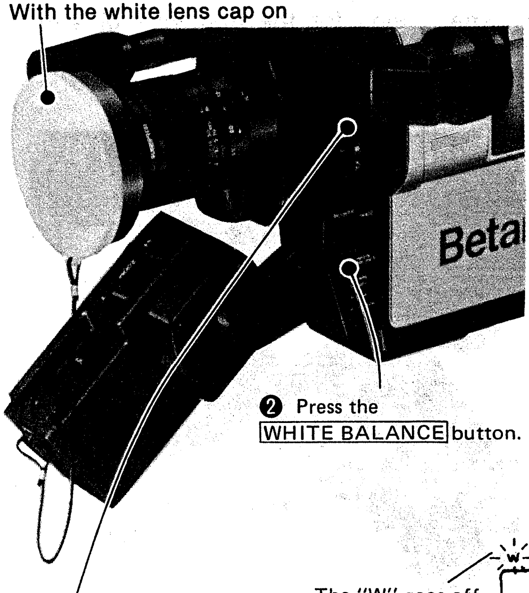
Betamovie is only for recording.
For tape duplication, two other VCRs are required.

1 Set to the standby mode.

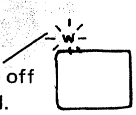

Press the POWER button.
The STANDBY lamp lights up.

2 Adjust the white balance.

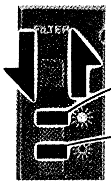
With the white lens cap on


❷ Press the WHITE BALANCE button.

❶ Set the FILTER selector according to the prevailing light condition.



The "W" goes off when adjusted.
In the viewfinder



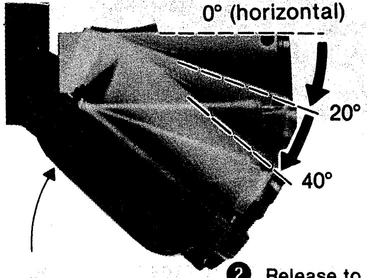
Sunlight (outdoors or indoors)
Artificial lights (indoors)

When you press the WHITE BALANCE button immediately after pressing the POWER button, the white balance may sometimes not adjust. In that case, press the WHITE BALANCE button again.

Get ready for shooting

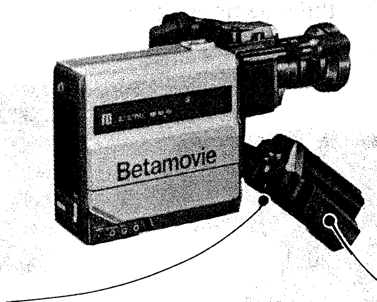
1 Lock the hand grip into a position.

Hand grip
Select a convenient angle.



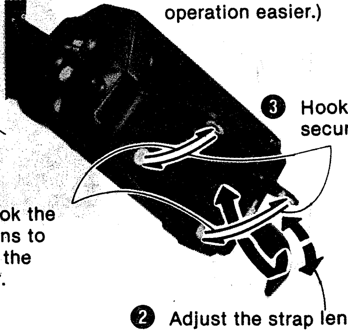
❶ Slide the RELEASE switch to unlock and bend.

❷ Release to lock at the desired angle.



2 Place your right hand under the grip belt and grasp the grip.

Grip belt
Adjust the length. (A tight belt makes operation easier.)


❸ Hook the buttons to secure the cover.

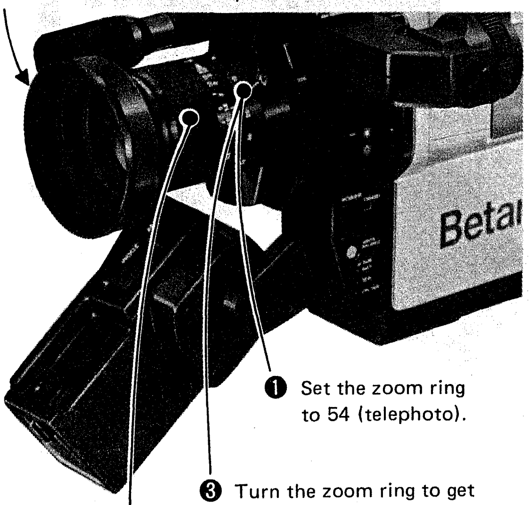
❶ Unhook the buttons to open the cover.

❷ Adjust the strap length to fit your hand.

3 Focus

Adjust the eyesight correction ring to your eye, when using for the first time or after another person. (See page 12, 15.)

Remove the white lens cap.

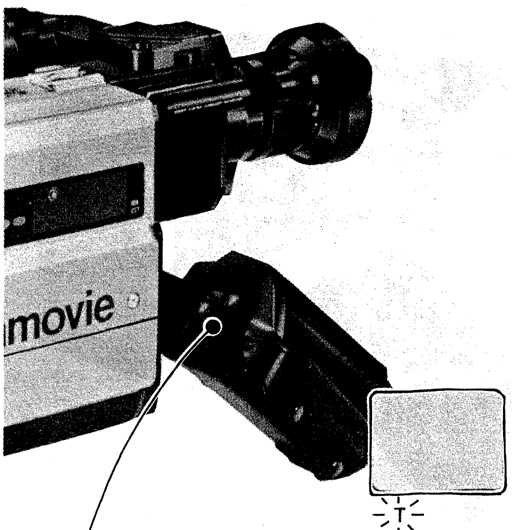


❶ Set the zoom ring to 54 (telephoto).

❸ Turn the zoom ring to get the desired short size.

❷ Turn the focus ring to focus.

4 Start recording

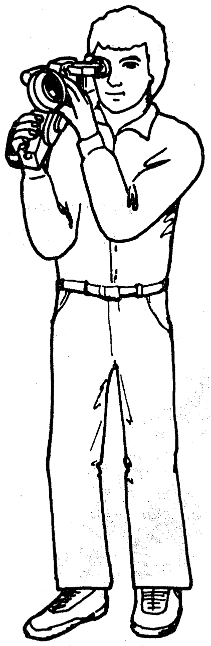


Press the REC START/STOP button.

The "T" lights during recording.

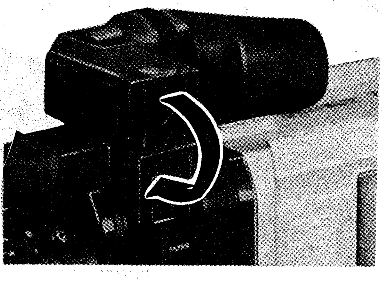
To stop recording momentarily
Press the REC START/STOP button again.
The STANDBY lamp is lit.
The unit is automatically turned off (the STANDBY lamp goes off) when it is in the standby mode over 3 minutes.

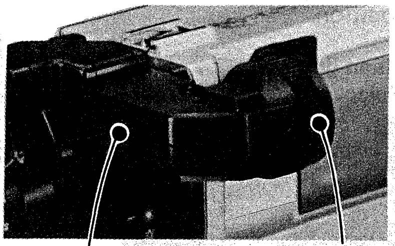
Monitoring the sound being recorded.
Plug the supplied eaphone into the EARPHONE jack and listen during recording.



3 Put the Betamovie on your shoulder, and put your right eye on the viewfinder eye cup.

Viewfinder
Fold down into operating position.





Eye cup

Lock into position securely.

Resting the Betamovie on your shoulder helps to keep it steady for shooting.

To start recording again

Press the REC START/STOP button again.

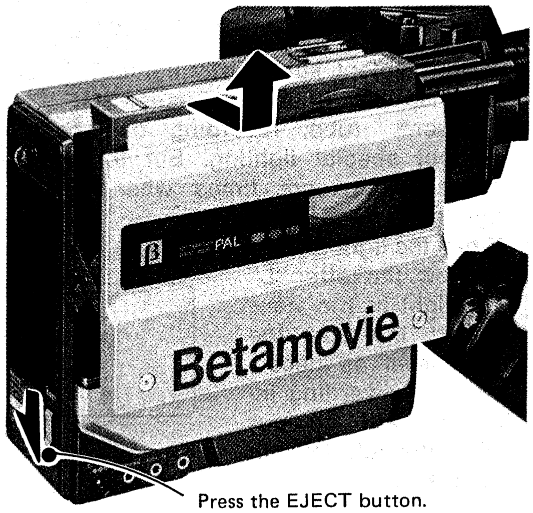
While the STANDBY lamp is lit.....
Recording starts immediately.
After the STANDBY lamp goes off.....
Recording starts after about 3 seconds.*
*It takes about 3 seconds for the picture tube warm-up before recording.

When you wish to start recording immediately, press the POWER button to set the Betamovie in the standby mode (the STANDBY lamp is lit.)

The battery power is also consumed in the standby mode as much as in the recording mode.

Smooth recordings can be made even if the recording is stopped and started again, unless the cassette is taken out.

5 Remove the recorded cassette.



Press the EJECT button.

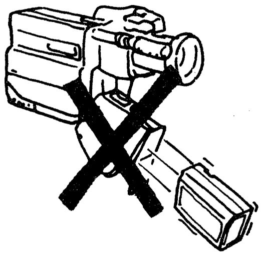
If the battery power is exhausted and the compartment lid cannot be opened, replace with a charged battery or connect with an ac power adaptor.

Run the tape for about 25 seconds **at the beginning of a cassette** before starting recording. Otherwise you may miss the starting point during playback when the tape is played back on video cassette recorders.

For "once-only" events such as weddings etc., it is strongly recommended to have a trial run to check that everything is working perfectly.

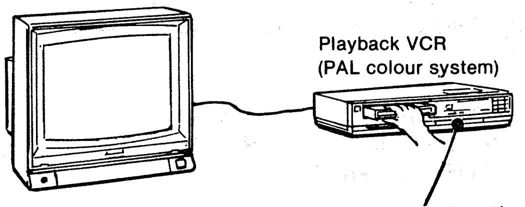
After recording

Take out the battery pack.
Hold the unit with the hand grip lid pointing up to open the battery compartment. Never point the lid downward as the battery pops out.



Charge the battery for the next use.

Playback of the tape
A video cassette recorder and a TV are required.



If streaks or snow appear on the TV screen, adjust the TRACKING control of the VCR for the best possible picture.

For details, refer to the instruction manual of the VCR.

1-3. THREE POINTS TO CONSIDER WHEN SHOOTING

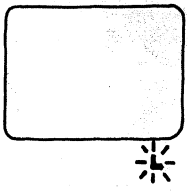
POINT 1

LIGHTING AND LIGHT DIRECTION

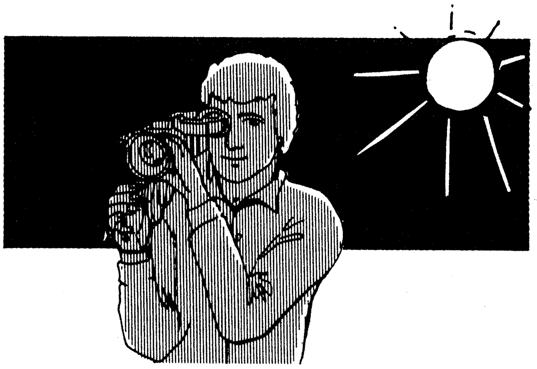
Is the subject sufficiently lighted? Actually, because the Betamovie uses SMF Trinicon® tube, recording can be done without special lighting. But for the best results, there are times when additional lighting is necessary.

When the light level is too low, the letter "L" will light in the viewfinder; increase the light level as necessary. The warning indicator will go out when the light level is satisfactory.

In the viewfinder



Generally, recording should be done with the sun at your back (front-lighting). This will illuminate the subject naturally and provide the best results from the very beginning of your recording.



It is also possible to record with the sun behind your subject (back-lighting), but this technique is more likely to produce less than satisfactory results until you become proficient. Front-lighting usually provides better results unless you're trying to create special effects

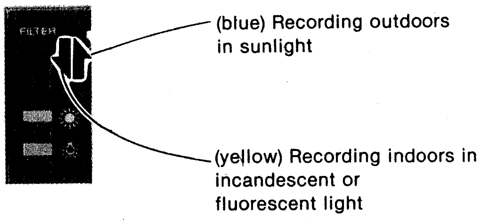
For further details, refer to the section "Brightness levels" in the HINTS FOR BETTER RECORDING section on page 13.

POINT 2

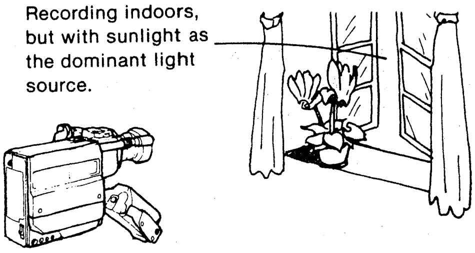
WHITE BALANCE

Because Betamovie uses an optical viewfinder, the image you see in it is usually the same colour as that of the subject. This is not always the case with the image being recorded, however, because of the fact that the colour of the subject can be affected by the colour temperature of the ambient light. The human eye has the ability to adapt to this situation, but a video camera does not. So to compensate for light temperature variations, the white balance control is used.
(See "Colour temperature" in the HINTS FOR BETTER RECORDING on page 13.)

White balance adjustment
First, set the FILTER to the appropriate ambient light position, depending on the most dominant light source.

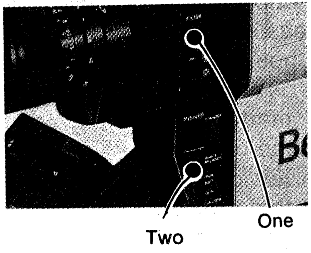

FILTER
(blue) Recording outdoors in sunlight
(yellow) Recording indoors in incandescent or fluorescent light

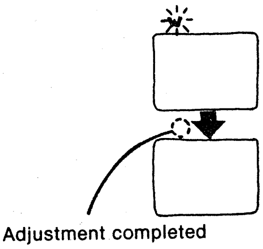
If the camera is indoors but the subject being recorded is in a window or outdoors, set the switch to the ☼ position.


Recording indoors, but with sunlight as the dominant light source.

With the FILTER set and **the white lens cap in place on the lens hood, aim the lens at a light source (indoors) or a subject from a distance of at least two meters (outdoors).** Then merely press the WHITE BALANCE button and the white balance will be perfectly adjusted automatically.

When adjusting white balance outdoors, more accurate adjustment can be made by setting the white balance in accordance with the light conditions the subject will be taped under. For example, if the subject will be taped in sunlight, **put the white lens cap on the lens hood** and point the camera toward the sun. If the subject will be taped in shadows, white balance should also be adjusted in shadows. When white balance adjustment is completed the "W" lamp in the viewfinder will go off.





Cautions on white balance adjustment

Losing white balance adjustment
The white balance adjustment is preserved for about 30 minutes after the power is turned off. If the power is off for more than 30 minutes, or if the FILTER selector position is changed, the white blance adjustment will be lost and the "W" lamp will light when the power is turned on. Set the white balance adjustment again as outlined above.

"W" lamp stays on after the WHITE BALANCE button is pushed.
- Adjustment cannot be made because of insufficient light (the "L" lamp will also light.)
- Adjustment cannot be made because of the presence of certain types of light, such as neon signs or tunnel lights.

Even if the "W" lamp does not go off, the white balance is nearly perfectly adjusted by the position of the FILTER selector, so recording is still possible.

Changing light sources
Because lighting remains basically the same for a given source, the white balance adjustment does not need to be changed very often. However, if a major light source change is made, such as from outdoor to indoor shooting, the white balance will have to be readjusted.

POINT 3

FOCUS

The first time you use the Betamovie, or if somebody else has been using the Betamovie, be sure to set the focus of the eyesight correction ring to your eyesight before recording.

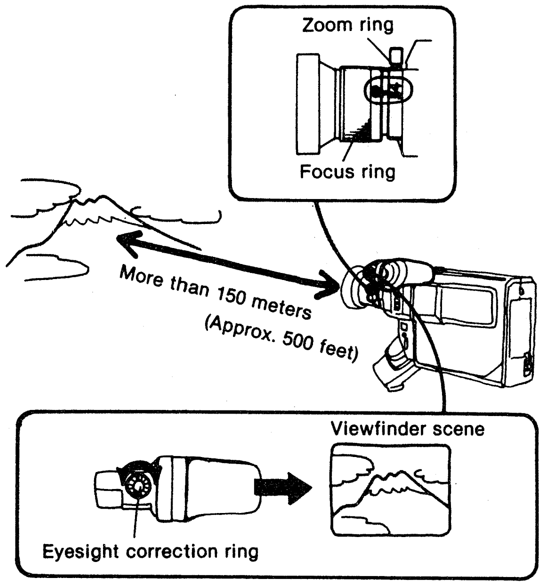
Eyesight adjustment

To properly use the optical viewfinder, it is first necessary to set the eyesight adjustment.

The distance of optimum vision varies from person to person, and the eyesight correction ring is incorporated to compensate for this. If this adjustment is not correct for the user, it is likely that the recorded images will not be in focus.

Using a subject

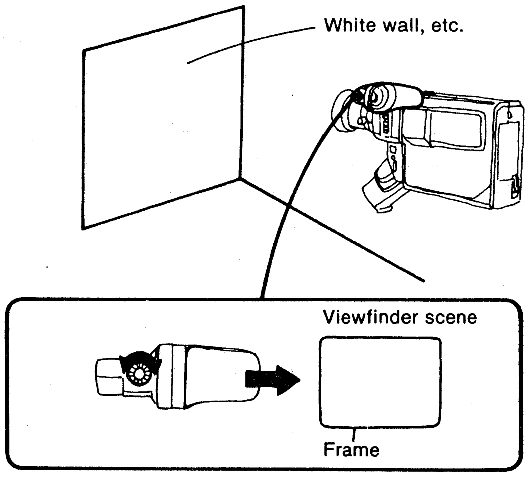
1. Set the zoom ring to **54** (telephoto) and the focus ring to ∞ (infinity).
2. Center a distant subject (at least 150 meters away) in the viewfinder.
3. Turn the eyesight correction ring until the clearest image of the subject is obtained.


Zoom ring
Focus ring
More than 150 meters
(Approx. 500 feet)
Viewfinder scene
Eyesight correction ring

Using the viewfinder frame

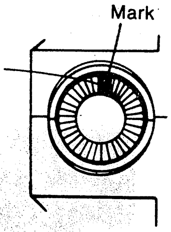
When a subject cannot be taken from a distance, such as in a room, etc.

1. Aim the Betamovie at a brightly-lit solid colour object.
2. Turn the eyesight correction ring until the viewfinder frame is in focus.


White wall, etc.
Viewfinder scene
Frame

You will find it useful to remember the setting of the eyesight correction ring so that you can easily reset it should the position be changed.

It does not matter how many times the ring is rotated to the left or right: the only thing that matters is the position of the mark on the ring.



1-4. UNDERSTANDING LIGHT – FOR BETTER RESULTS

Brightness levels

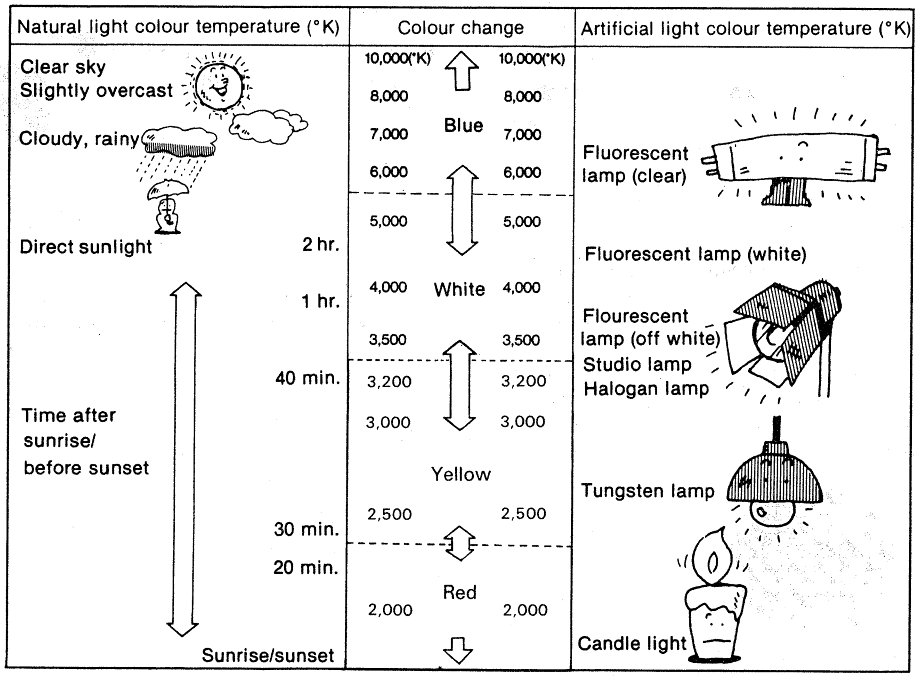
The single greatest influence on picture quality is the brightness level. Using the following chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording.

When to use an ND filter
Exceptionally bright scenes such as sunny days at the beach in summer or on snow fields in winter will look "washed out" when recorded. To make these scenes recorded naturally, an ND filter is required. (Refer to the chart)
Three types are available—ND2, ND4, ND8—which reduce the exposure level to 1/2, 1/4, and 1/8, respectively.
Select filters to match the lens diameter of 52 mm.

ND filter required	Unit: lux	Snow-covered mountains Snow fields Sandy beach, clear day in summer
Normal recording	100,000 10,000 1,000 500	**Clear day, mid-day(100,000)** **Clear day, mid-afternoon (35,000)** **Overcast day, mid-day (32,000)** **Overcast day, one hour after sunrise (2,000)** **Office lit by fluorescent lamps, near window (1,000)** **Clear day, one hour before sunset (1,000)** **Department store counter (500~700)** **Station wicket (650)**
Video light recommended	100	Office lit by fluorescent lamps (400~500) Room lit by two 30 W Fluorescent lamps (300) Subway station platform (300) Arcade at night (150~200)
Video light required	10	Theater lobby (15~35) Candle light (10~15)

Colour temperature – how it effects white balance adjustment

If the temperature of an object continues to increase, it will eventually begin giving off light. At this time, there is a fixed relationship between the object's temperature and its "light colour." The temperature of the object radiating the light is expressed in absolute temperature (°K). This is also known as the colour temperature, which in turn stands for "light colour." As colour temperature increases, the light colour changes from red to yellow to white to blue.


Natural light colour temperature (°K)
Colour change
Artificial light colour temperature (°K)
Clear sky
Slightly overcast
Cloudy, rainy
Direct sunlight
2 hr.
1 hr.
40 min.
Time after sunrise/ before sunset
30 min.
20 min.
Sunrise/sunset
10,000(°K)
8,000
7,000
Blue
6,000
5,000
4,000
White
3,500
3,200
3,000
Yellow
2,500
Red
2,000
Fluorescent lamp (clear)
Fluorescent lamp (white)
Flourescent lamp (off white)
Studio lamp
Halogan lamp
Tungsten lamp
Candle light

1-5. CHARACTERISTICS OF OPTICAL VIEWFINDERS

- **Color pictures are available...**

Subjects which tend to merge with the background,
such as a flower or bird in the woods or a rabbit in a field of snow,
which would be hard to see with a black-and-white viewfinder, can be clearly distinguished.

- **Compact and light-weight...**
- **Always ready...**

Color pictures are always viewable in the viewfinder, even without the Betamovie turned on.
Recording can start after about 3 seconds even if the unit is not in the standby mode.

- **Power saving...**

While an electronic viewfinder needs power to operate, an optical viewfinder consumes no power at all.

These are the reasons why an optical viewfinder is used for the Betamovie.
Keep in mind, however, that the picture being recorded is not exactly the picture shown in the optical viewfinder...
Note that you must set the eyesight adjustment of the viewfinder before you can focus accurately.

1-6. EYESIGHT ADJUSTMENT

First, set
the focus ring at ∞
the zoom ring at **54.**

Select one of the following methods.

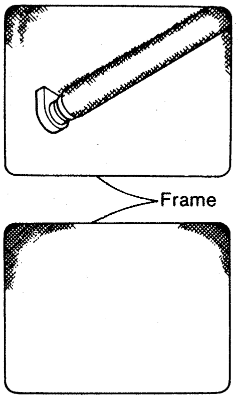
Indoors

Method 1 Remove the white lens cap and aim the unit at a fluorescent lamp. (It is not necessary that the focus ring be adjusted at this point.)

Method 2 Aim at an incandescent lamp **with the white lens cap on.**

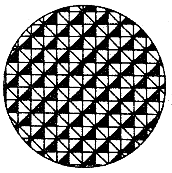
Method 3 Remove the white lens cap and aim at a brightly-lit white object.

Fluorescent lamp



White lens cap attached or brightly-lit white object

Now adjust the eyesight correction ring so that the viewfinder frame is the clearest. Focusing the viewfinder requires some skill. You will know the viewfinder is focused when the image is broken up into very fine lines.



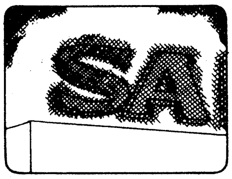
Enlargement of "fine lines" in the viewfinder

Outdoors

Method 1 (Daytime.) Center a subject at least 150 meters (500 feet) away in the viewfinder. Adjust the eyesight correction ring until the clearest image of the subject is obtained.

Method 2 (Night time.) Center a light at least 150 meters (500 feet) away in the viewfinder. Adjust the ring until the light is clear.

Neon signs, etc.



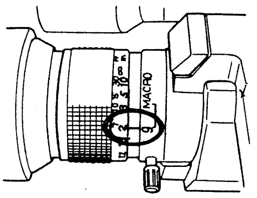
When the subject is the clearest, the "fine lines" are seen.

When the eyesight adjustment has been completed, the viewfinder frame is the clearest, the image in the viewfinder will be clear and broken up into very fine lines.

1-7. FOCUSING

How to be (almost always) in focus -rough focus

Make sure the eyesight adjustment is properly set.
Set the focus ring at **2 m** and the zoom ring at **9** and leave them at these settings.



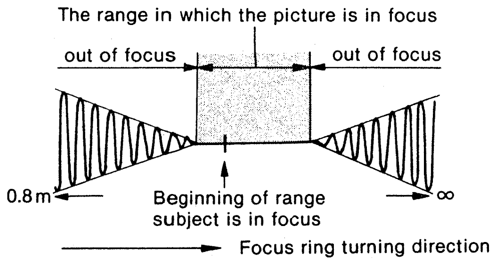
At these settings, the depth of field (the range in which the picture will be in focus) is:
Indoors from 1.2 m to 9.5 m (4 to 31 feet)
Outdoors on a clear day from 40 cm (16 inches) to ∞ (infinity)

Use the viewfinder simply to frame the picture.

How to focus precisely

Make sure the eyesight adjustment is properly set.

1 Set the zoom ring at **54** and the focus ring at **0.8 m.**
2 Turn the focus ring toward ∞ until the point at which the subject **begins to come into focus.**

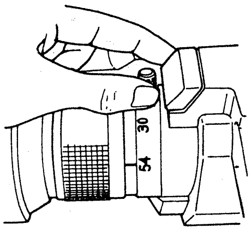

The range in which the picture is in focus
out of focus
out of focus
0.8 m
Beginning of range subject is in focus
∞
Focus ring turning direction

Now you are ready to start recording.

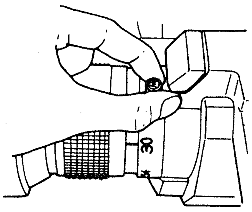
The closer the zoom ring is to **9,** the deeper the depth of field becomes. Shoot pictures as wide as possible (**30** and under) if there is no need to be telephoto. Be sure to focus for each shot with the zoom ring at **54.**

An easy way to manipulate the zoom ring for focusing while looking through the viewfinder.

1 Turn the zoom lever to **54** with your thumb.



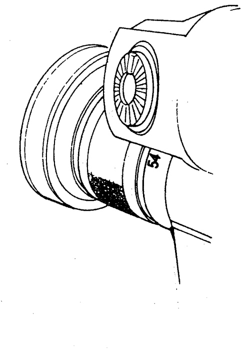
2 Place the thumb of the left hand as shown, and with your forefinger turn the lever until it touches your thumb. The value of the zoom ring will be around **30** at this point.



Practice eyesight adjustment and focusing over and over on the same tape until you are satisfied with the results.
It is better to practice on a subject with letters or lines on it, rather than a landscape. You might find it useful to record your voice as you practice — "Now the subject is just coming into focus" — so that you can see the relation between focus in the viewfinder and focus of the recorded subject.

To monitor the value of the zoom ring while looking through the viewfinder

Open your left eye to see the zoom ring while keeping your right eye in the viewfinder.
When you see **54,** the ring is set approximately at **30.**
With practice, you can estimate the value of the zoom ring by the number seen with your left eye.



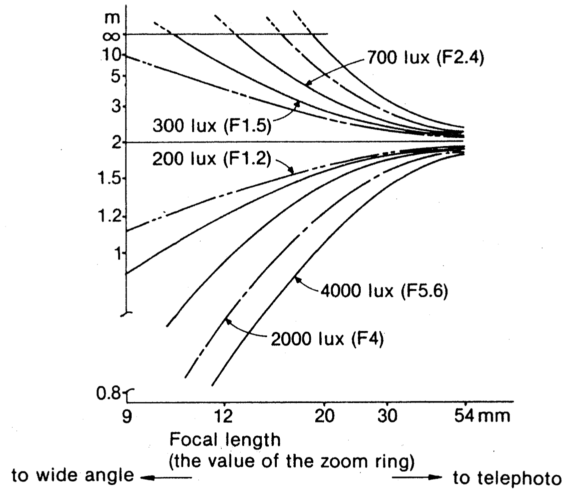
1-8. DEPTH OF FIELD

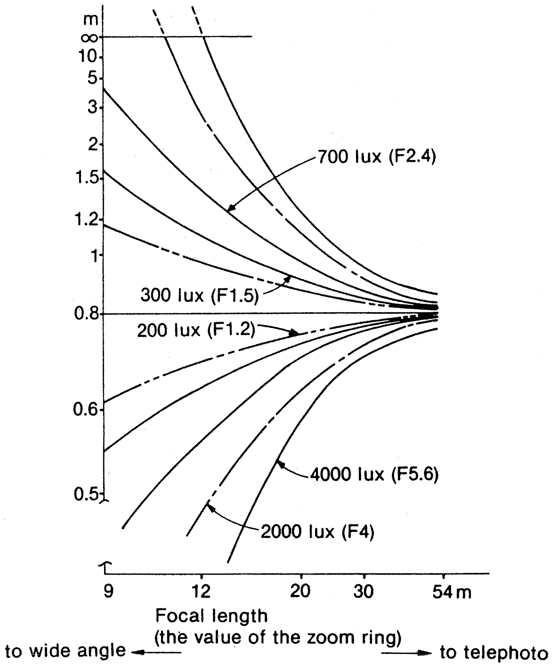
—Refer to the charts below.

In any lens a subject which extends some distance either side of the focal point can be shot in focus, as long as it falls within the "depth of field."

The depth of field varys depending on the lens' focal length (wide angle or telephoto), the amount of light and the distance from the subject.

The figures on the focus ring indicate the distance between the front of the lens (not including the lens hood) and the subject when the subject is in focus.


Depth of field (focus ring set at **2m**)


Depth of field (focus ring set at **0.8m**)

For a sharp picture, please observe the following points.

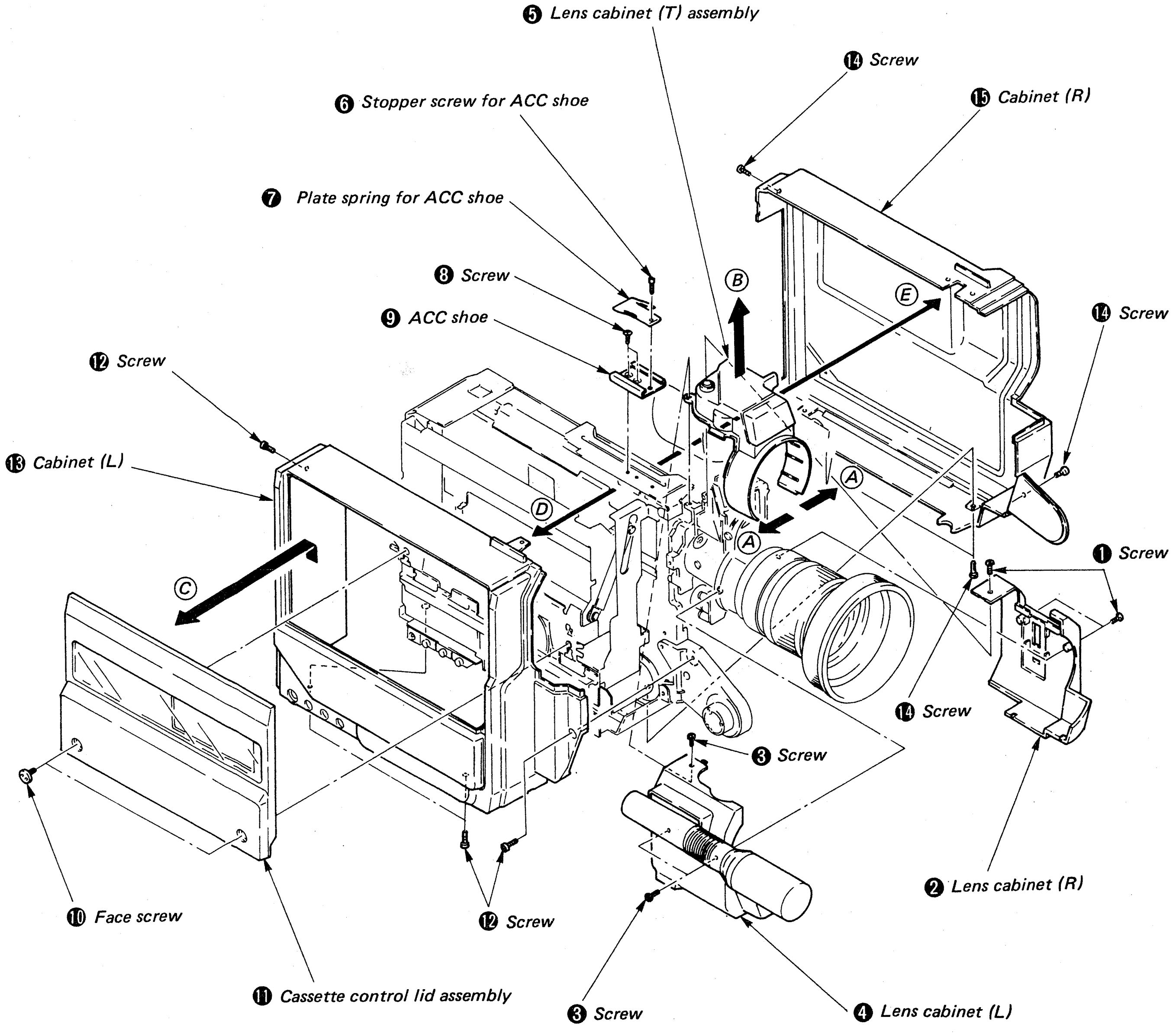
1 Get close to the subject.
2 Use a wide angle shot.
3 Make sure the light is sufficient.

These three points apply to any type of video camera.

SECTION 2
DISASSEMBLY

2-1. CABINET REMOVING PROCEDURE

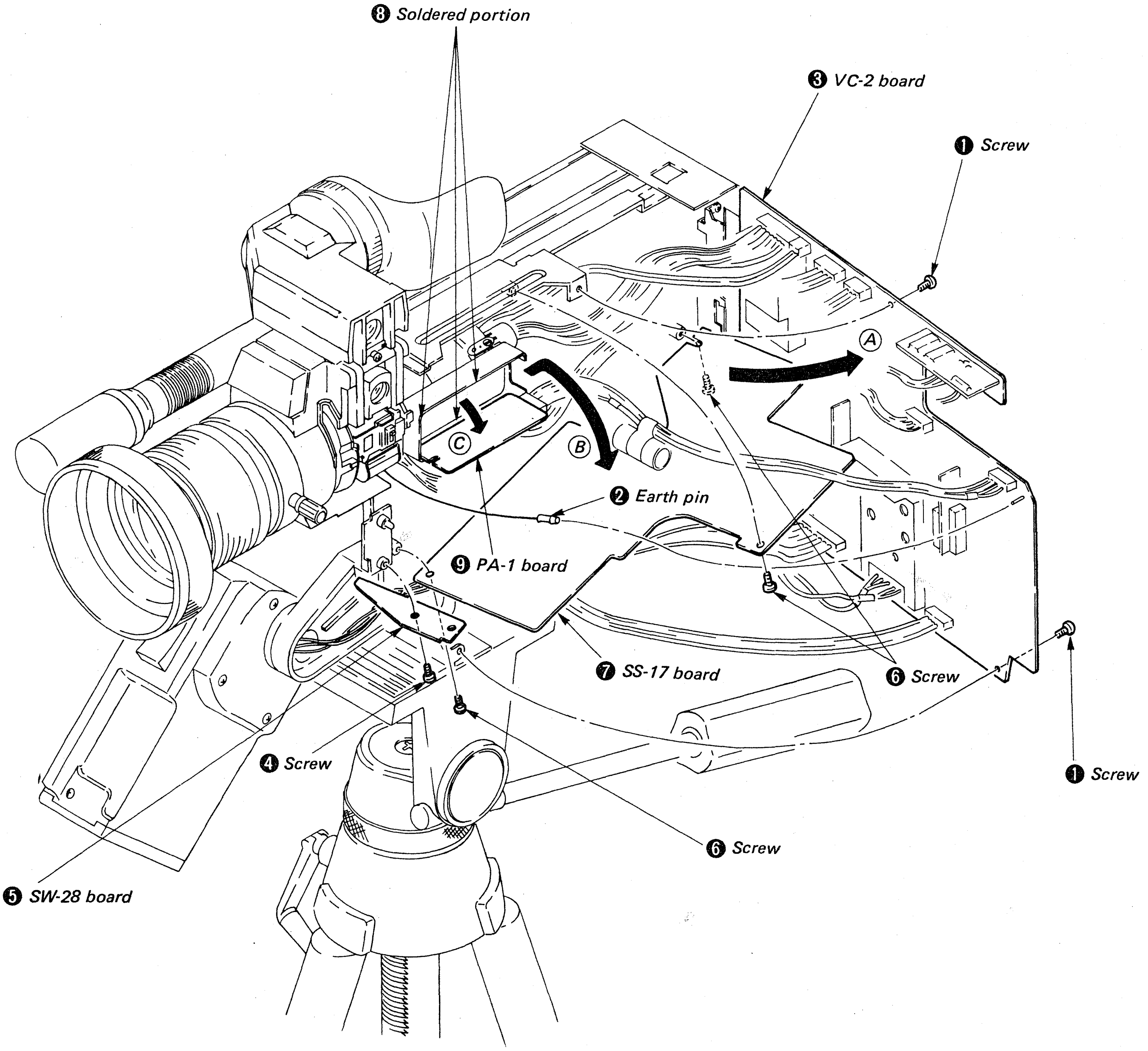
❶ Remove three screws (+P2 x 8).
❷ Remove lens cabinet (R).
❸ Remove three screws (+P2 x 8).
❹ Remove lens cabinet (L).
❺ Remove lens cabinet (T) assembly in the direction of arrow Ⓑ after opening it in the direction of arrow Ⓐ.
❻ Remove Stopper screw for ACC shoe.
❼ Remove plate spring for ACC shoe.
❽ Remove two screws (K2.6 x 6).
❾ Remove ACC shoe.
❿ Remove two face screws.
⓫ Remove cassette control assembly in the direction of arrow Ⓒ.
⓬ Remove four screws (+B2.6 x 6).
⓭ Remove cabinet (L) in the direction of arrow Ⓓ.
⓮ Remove four screws (+B2.6 x 6).
⓯ Remove cabinet (R) in the direction of arrow Ⓔ.



❺ Lens cabinet (T) assembly
⓮ Screw
❻ Stopper screw for ACC shoe
⓯ Cabinet (R)
❼ Plate spring for ACC shoe
❽ Screw
Ⓑ
Ⓔ
❾ ACC shoe
⓮ Screw
⓬ Screw
⓭ Cabinet (L)
Ⓓ
Ⓐ
Ⓐ
❶ Screw
Ⓒ
⓮ Screw
❸ Screw
❷ Lens cabinet (R)
❿ Face screw
⓬ Screw
⓫ Cassette control lid assembly
❸ Screw
❹ Lens cabinet (L)

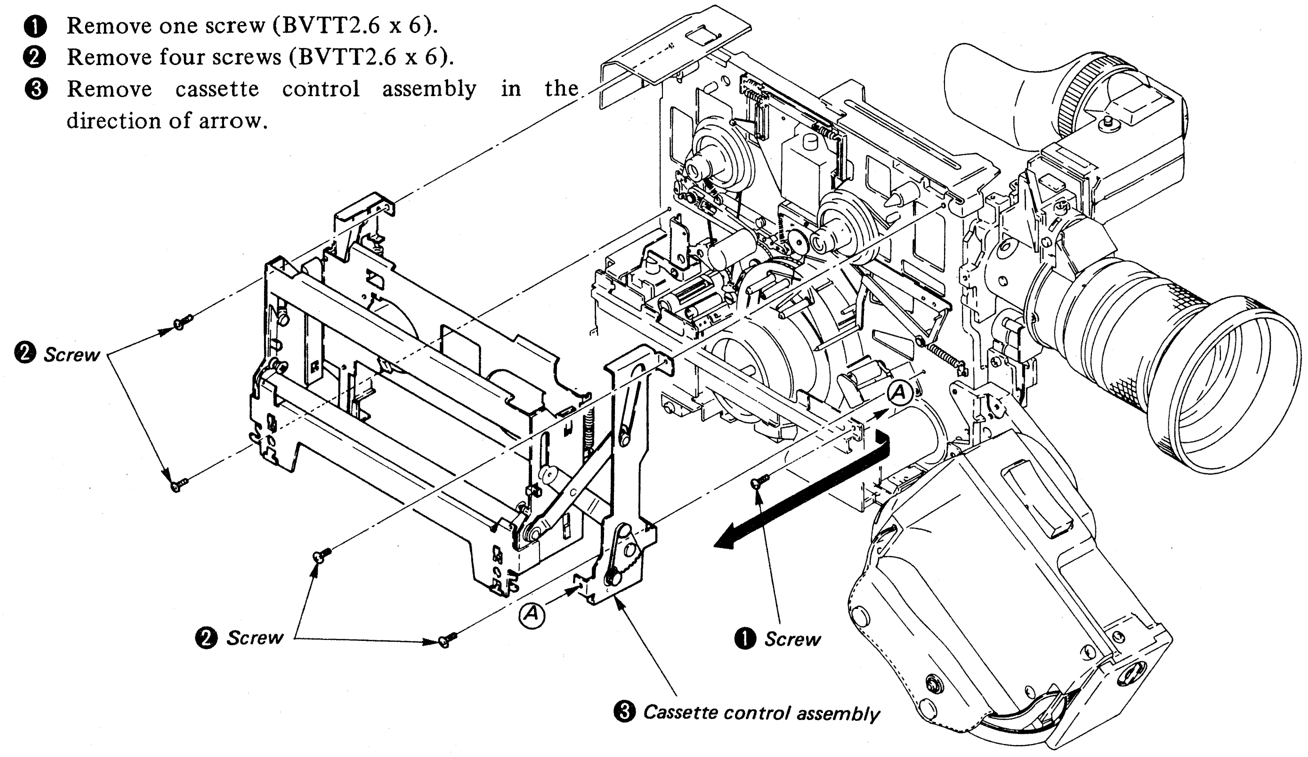
2-2. PROCEDURE FOR OPENING SS-17 AND VC-2 BOARDS

❶ Remove two screws (BVTT2.6 x 6).
❷ Pull out earth pin.
❸ Open VC-2 board in the direction of arrow Ⓐ.
❹ Remove one screw (+PTP2.6 x 10).
❺ Remove SW-28 board.
❻ Remove three screws (BVTT2.6 x 6).
❼ Open SS-17 board in the direction of arrow Ⓑ.
❽ Remove soldered portions of PA sield case and PA-1 board.
❾ Open PA-1 board in the direction of arrow Ⓒ.


❽ Soldered portion
❸ VC-2 board
❶ Screw
A
B
C
❷ Earth pin
❾ PA-1 board
❼ SS-17 board
❻ Screw
❶ Screw
❹ Screw
❻ Screw
❺ SW-28 board

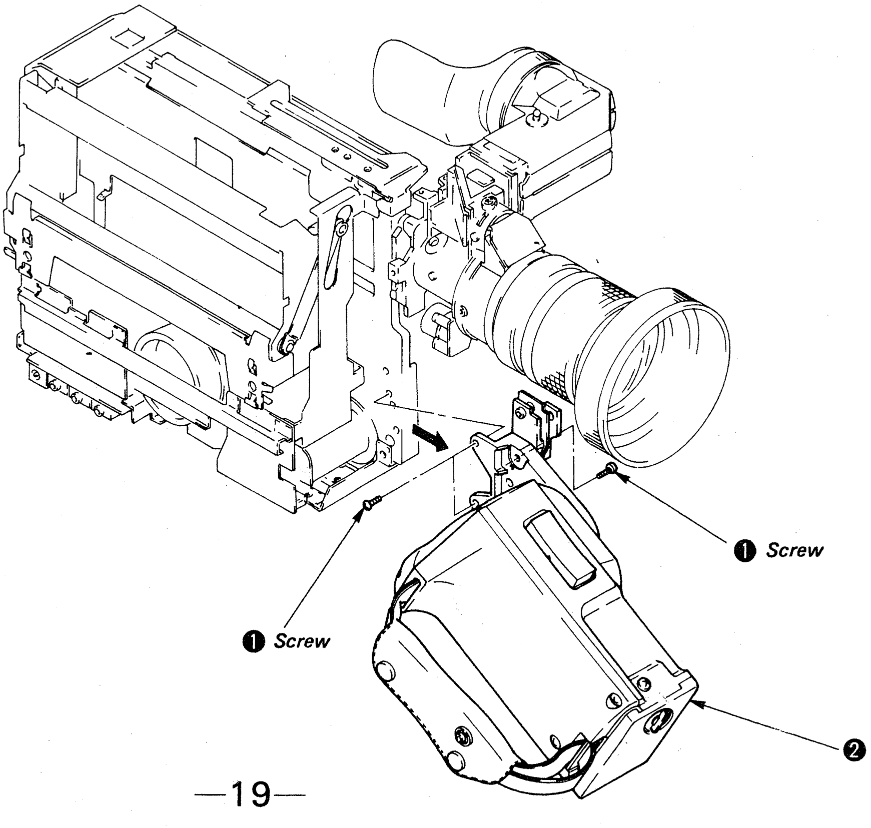
2-3. PROCEDURE FOR REMOVING CASSETTE CONTROL ASSEMBLY

❶ Remove one screw (BVTT2.6 x 6).
❷ Remove four screws (BVTT2.6 x 6).
❸ Remove cassette control assembly in the direction of arrow.


❷ Screw
❷ Screw
Ⓐ
Ⓐ
❶ Screw
❸ Cassette control assembly

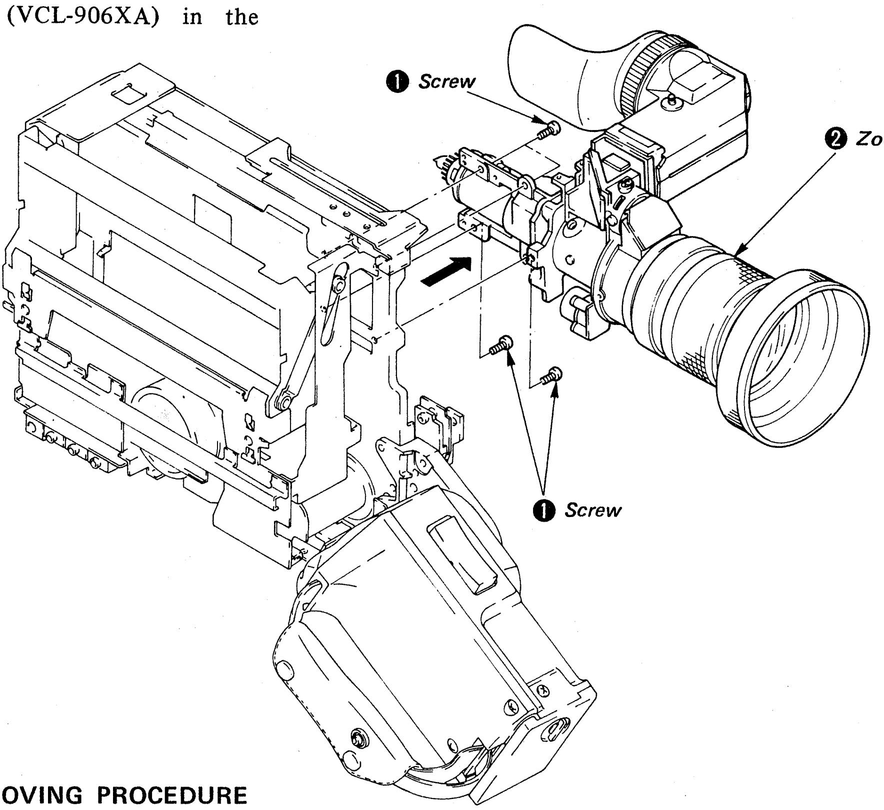
2-4. GRIP REMOVING PROCEDURE

❶ Remove three screws (BVTT2.6 x 8).
❷ Remove grip in the direction of arrow.


❶ Screw
❶ Screw
❷

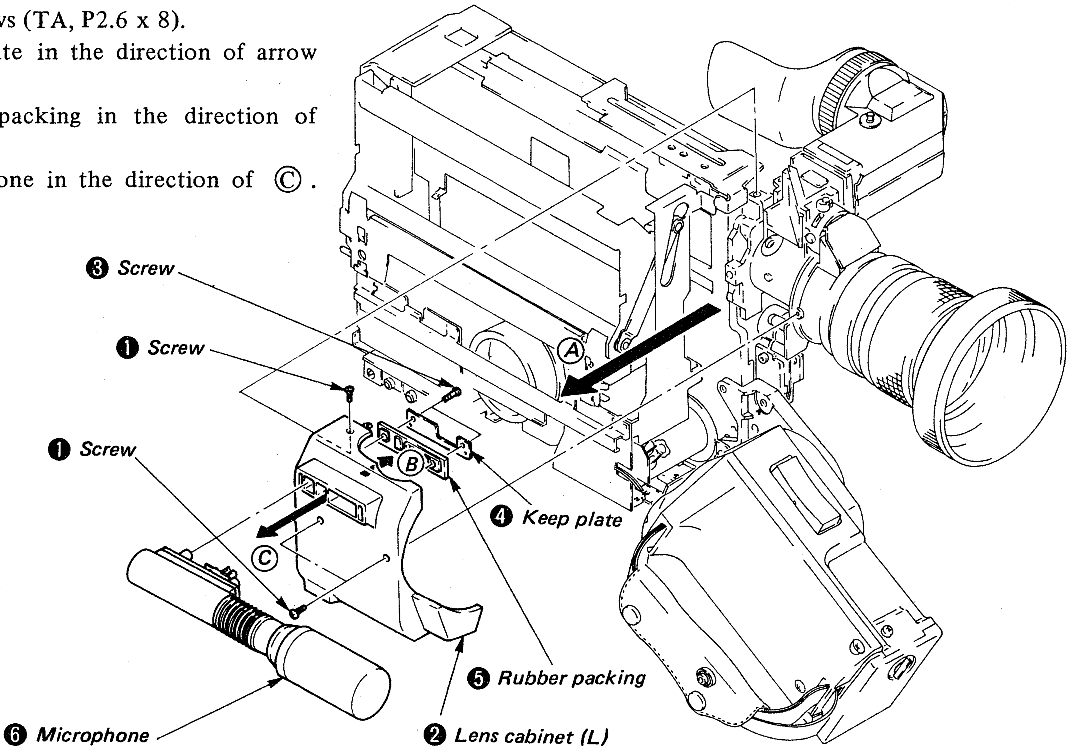
2-5. ZOOM LENS (VCL-906XA) REMOVING PROCEDURE

❶ Remove four screws (BVTT2.6 x 8).
❷ Remove zoom lens (VCL-906XA) in the direction of arrow.


❶ Screw
❷ Zoom lens
❶ Screw

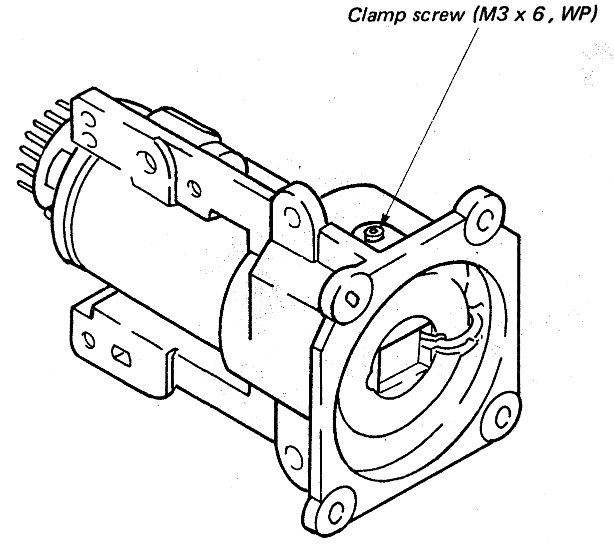
2-6. MICROPHONE REMOVING PROCEDURE

❶ Remove three screws (+P2 x 8).
❷ Remove lens cabinet (L) in the direction of arrow Ⓐ.
❸ Remove two screws (TA, P2.6 x 8).
❹ Remove keep plate in the direction of arrow Ⓑ.
❺ Remove rubber packing in the direction of arrow Ⓑ.
❻ Remove microphone in the direction of Ⓒ.

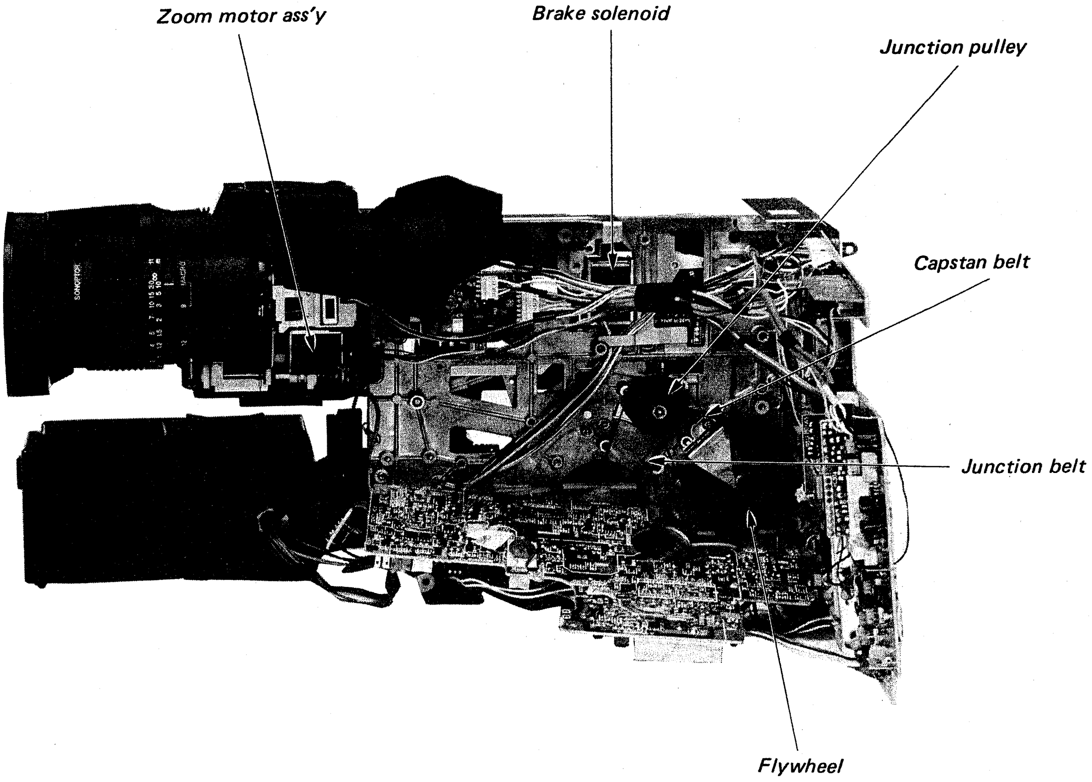

❸ Screw
❶ Screw
❶ Screw
Ⓐ
Ⓑ
Ⓒ
❹ Keep plate
❺ Rubber packing
❻ Microphone
❷ Lens cabinet (L)

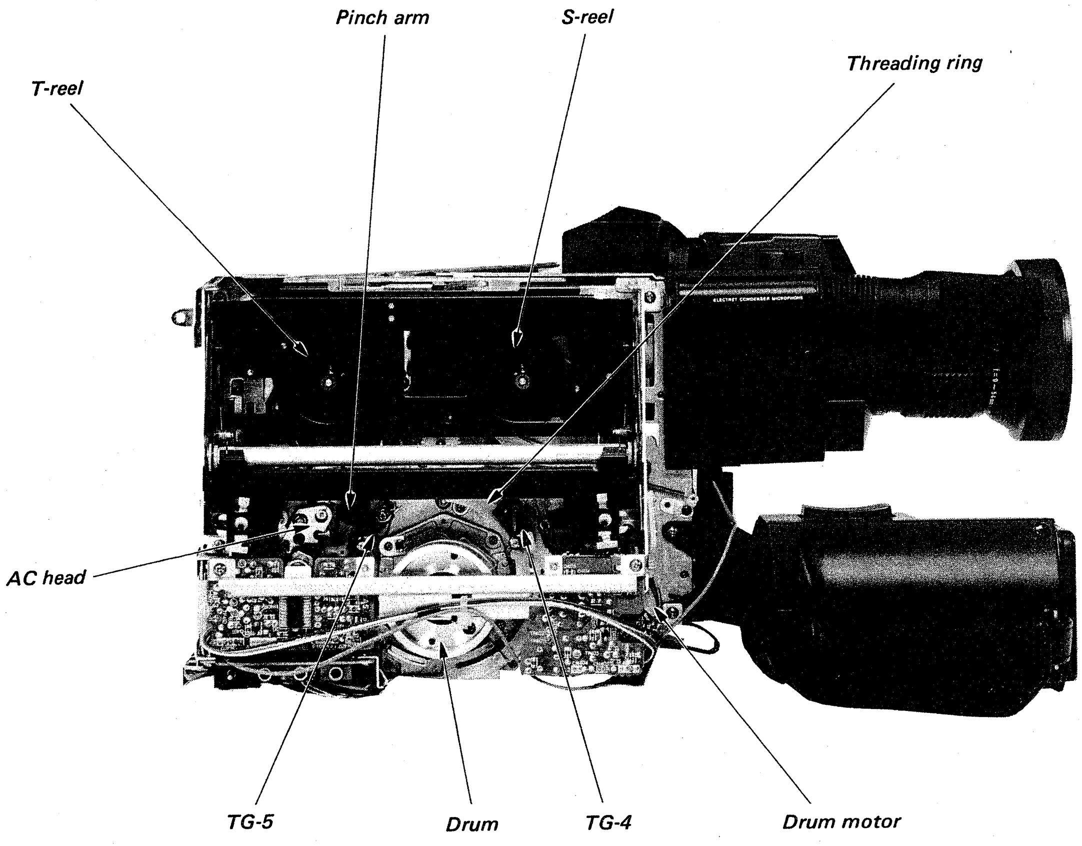
2-7. CAUTION WHEN REPLACING CAMERA TUBE

When tightening the clamp screw of camera tube (for replacement), tighten the clamp screw with a torque of 5.0kg·cm ± 1kg·cm.


Clamp screw (M3 x 6, WP)

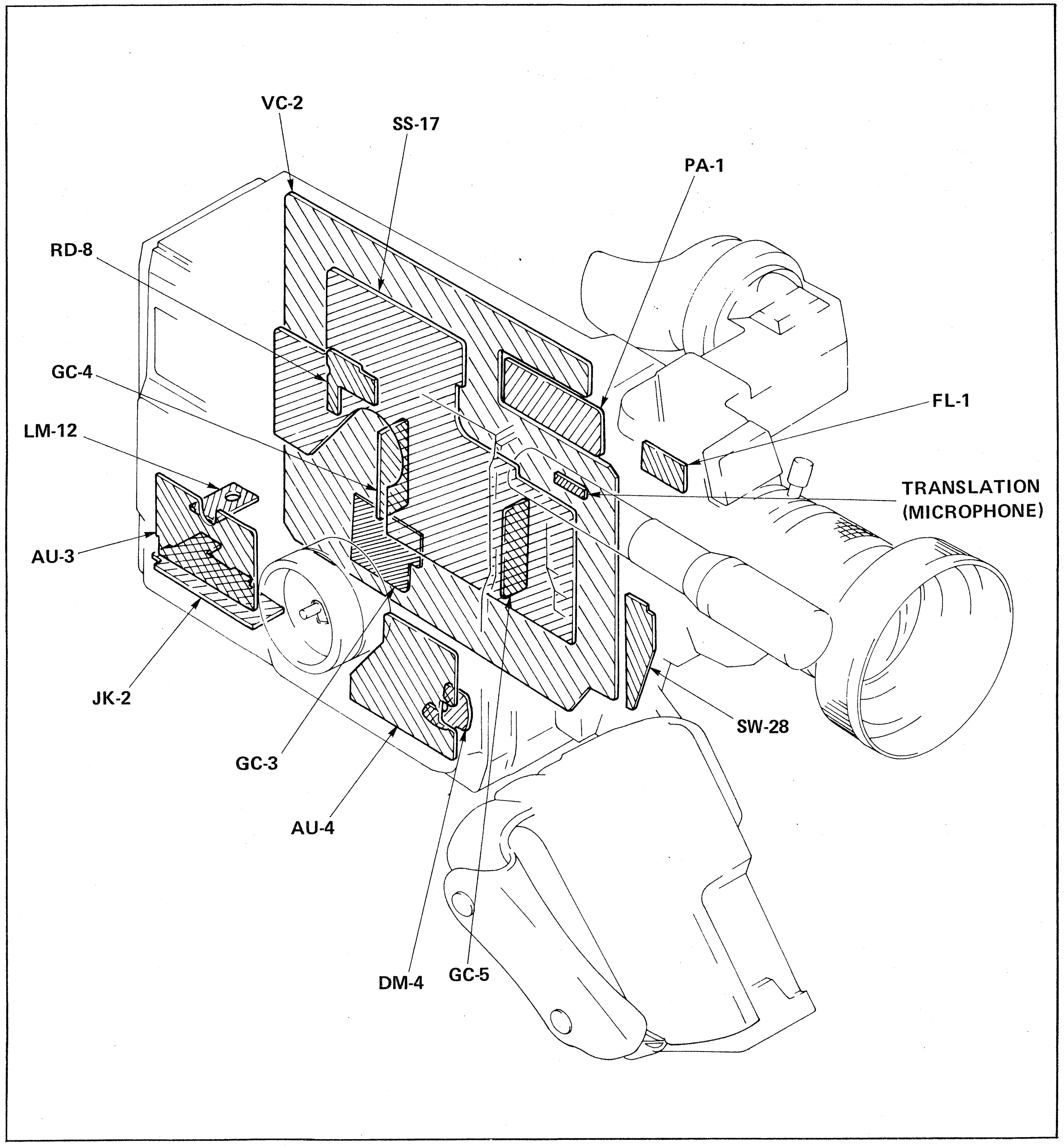
2-8. INSIDE VIEWS


Zoom motor ass'y
Brake solenoid
Junction pulley
Capstan belt
Junction belt
Flywheel

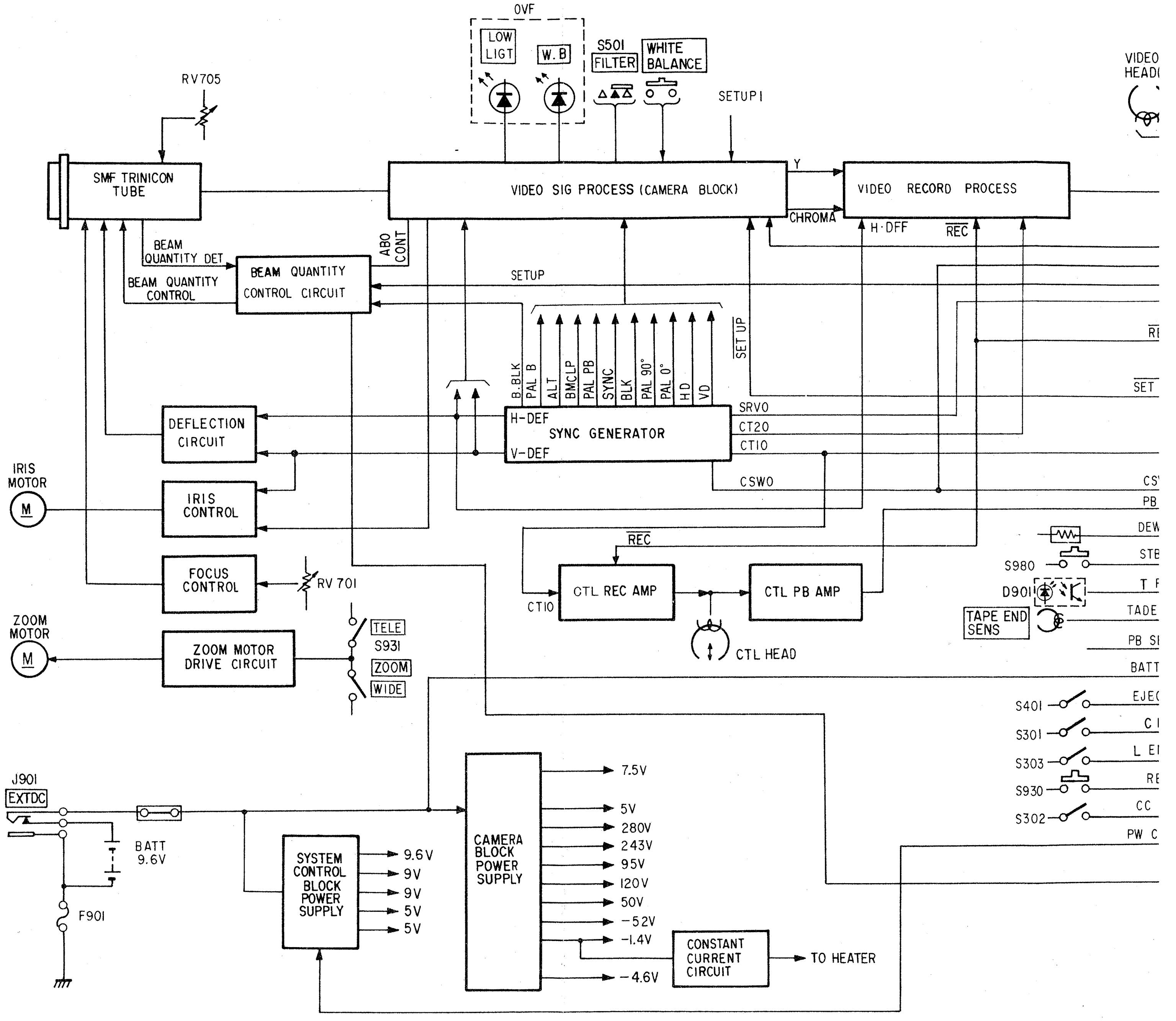

Pinch arm
S-reel
Threading ring
T-reel
AC head
TG-5
Drum
TG-4
Drum motor

SECTION 3
BLOCK DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

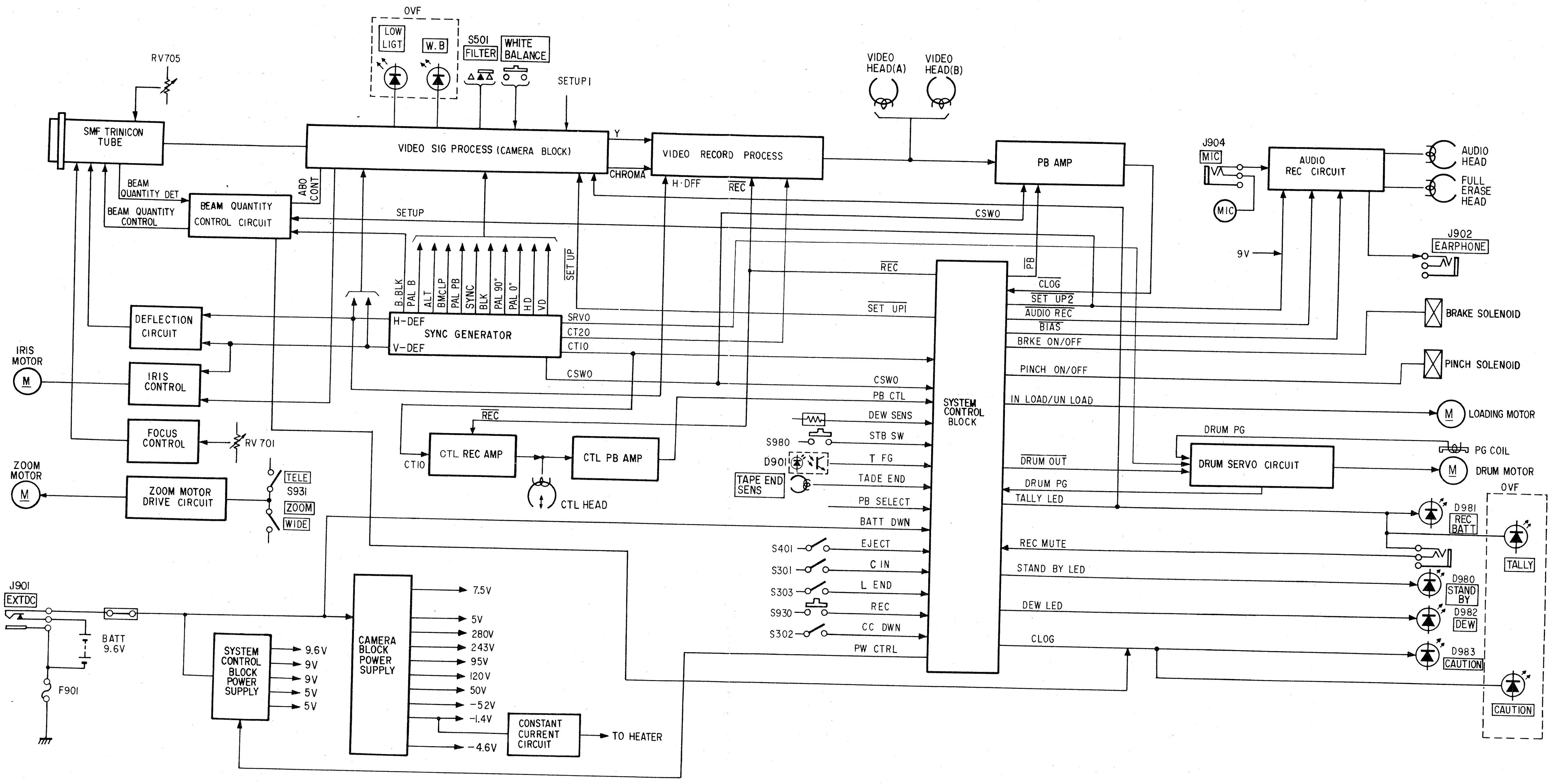

VC-2
SS-17
PA-1
RD-8
GC-4
FL-1
LM-12
TRANSLATION
(MICROPHONE)
AU-3
JK-2
SW-28
GC-3
AU-4
DM-4
GC-5

3-2. OVERALL BLOCK DIAGRAM


OVF
LOW LIGT
W. B
S501 FILTER
WHITE BALANCE
SETUP I
VIDEO HEAD
RV705
SMF TRINICON TUBE
VIDEO SIG PROCESS (CAMERA BLOCK)
Y
CHROMA
VIDEO RECORD PROCESS
H·DFF
REC
BEAM QUANTITY DET
BEAM QUANTITY CONTROL
BEAM QUANTITY CONTROL CIRCUIT
ABO CONT
SETUP
B.BLK
PAL B
ALT
BMCLP
PAL PB
SYNC
BLK
PAL 90°
PAL 0°
HD
VD
SET UP
DEFLECTION CIRCUIT
H-DEF
V-DEF
SYNC GENERATOR
SRVO
CT20
CT10
CSWO
IRIS MOTOR
M
IRIS CONTROL
FOCUS CONTROL
RV 701
REC
CTL REC AMP
CTL PB AMP
CT10
CTL HEAD
ZOOM MOTOR
M
ZOOM MOTOR DRIVE CIRCUIT
TELE
S931
ZOOM
WIDE
S980
D901
TAPE END SENS
S401
S301
S303
S930
S302
SET
PB
DEW
STB
TADE
BATT
CC
J901
EXTDC
BATT 9.6V
F901
SYSTEM CONTROL BLOCK POWER SUPPLY
9.6V
9V
9V
5V
5V
CAMERA BLOCK POWER SUPPLY
7.5V
5V
280V
243V
95V
120V
50V
−52V
−1.4V
−4.6V
CONSTANT CURRENT CIRCUIT
TO HEATER

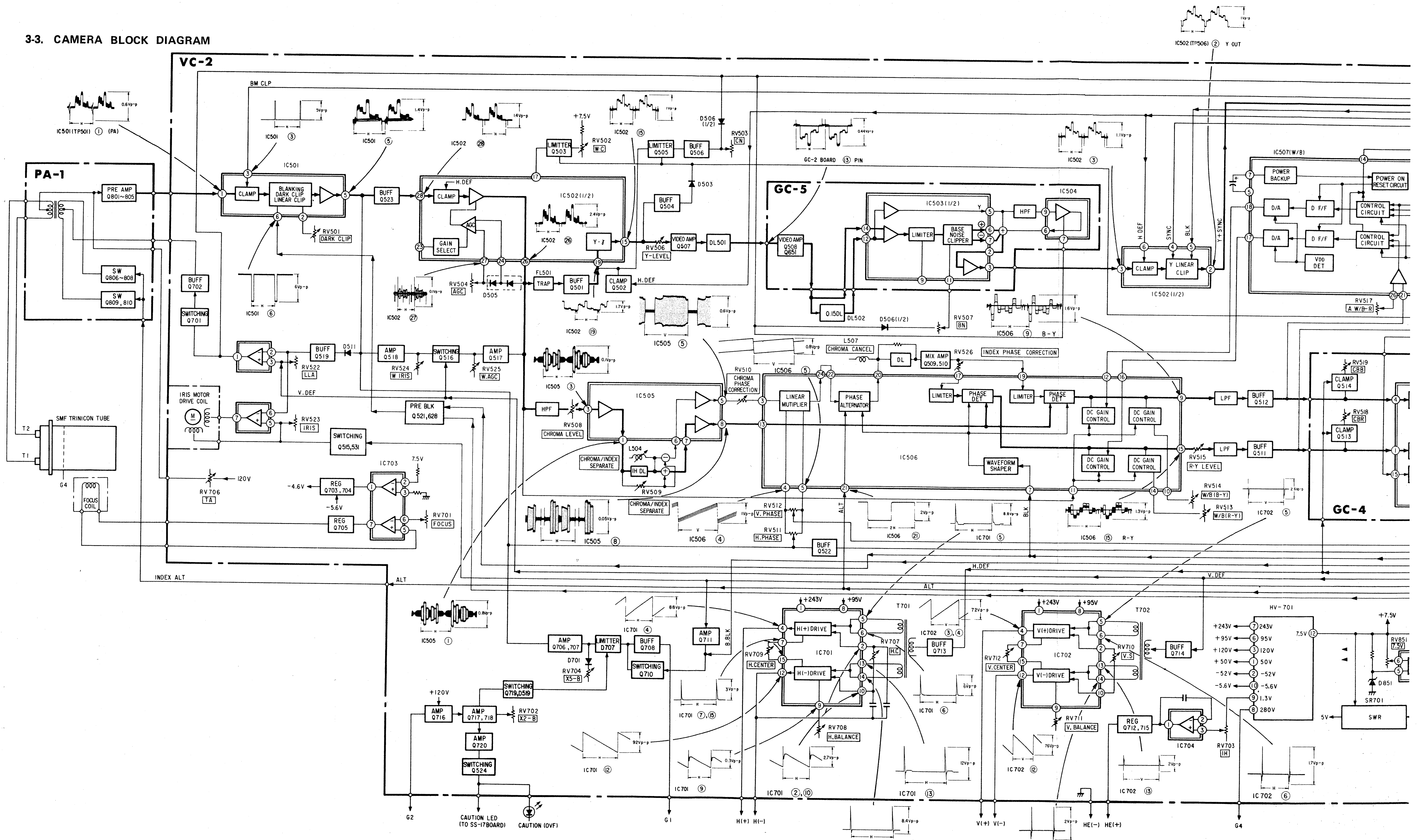
3-2. OVERALL BLOCK DIAGRAM

ATION
'HONE)

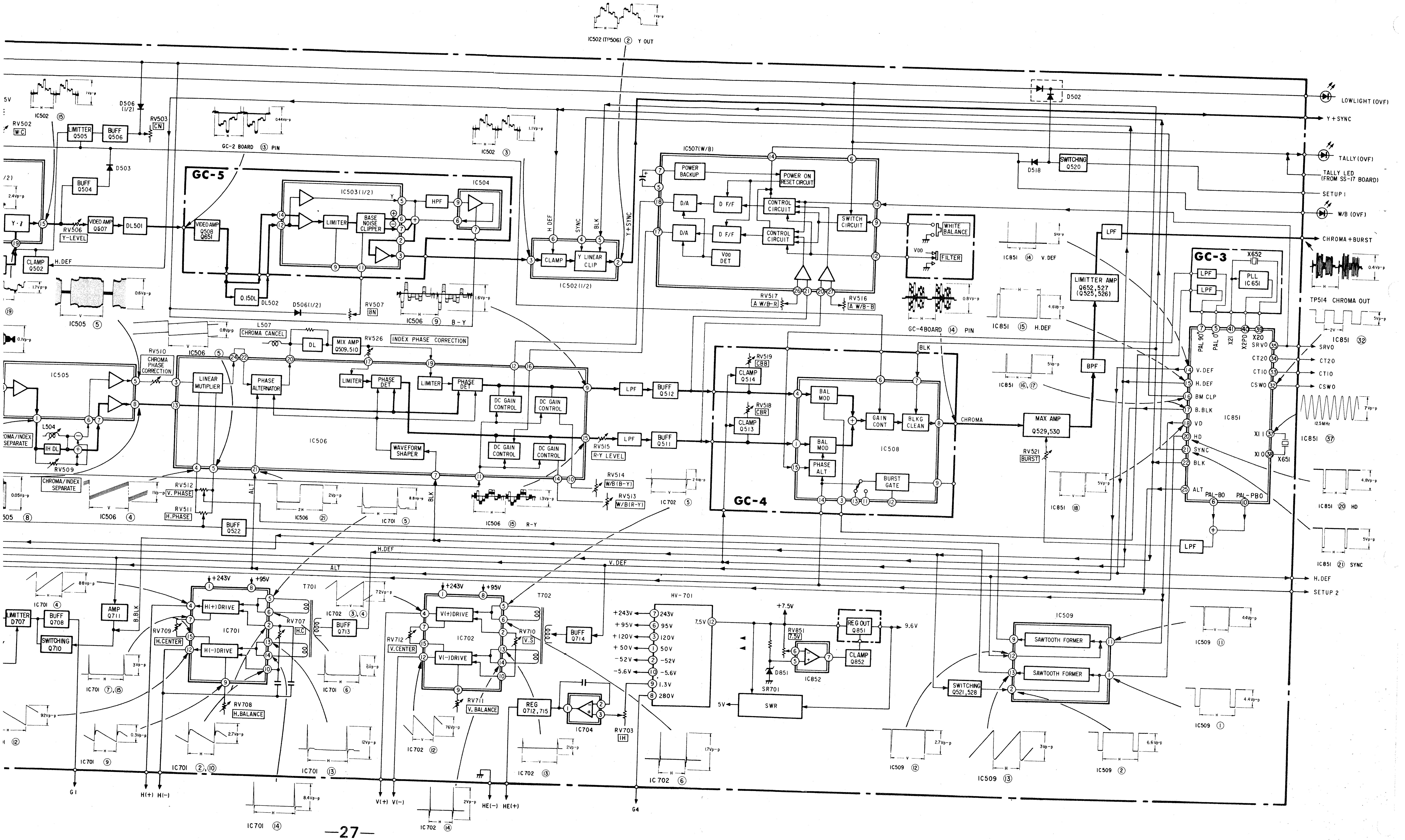


OVF
LOW LIGT
W.B
S501 FILTER
WHITE BALANCE
SETUP1
RV705
SMF TRINICON TUBE
VIDEO SIG PROCESS (CAMERA BLOCK)
Y
CHROMA
VIDEO RECORD PROCESS
H·DFF
REC
VIDEO HEAD(A)
VIDEO HEAD(B)
PB AMP
CSWO
J904 MIC
MIC
AUDIO REC CIRCUIT
AUDIO HEAD
FULL ERASE HEAD
J902 EARPHONE
9V
BEAM QUANTITY DET
BEAM QUANTITY CONTROL
BEAM QUANTITY CONTROL CIRCUIT
ABO CONT
SETUP
B.BLK
PAL B
ALT
BMCLP
PAL PB
SYNC
BLK
PAL 90°
PAL 0°
HD
VD
SET UP
DEFLECTION CIRCUIT
H-DEF
V-DEF
SYNC GENERATOR
SRVO
CT20
CT10
CSWO
IRIS MOTOR
IRIS CONTROL
FOCUS CONTROL
RV 701
ZOOM MOTOR
ZOOM MOTOR DRIVE CIRCUIT
TELE
S931
ZOOM
WIDE
REC
CTL REC AMP
CTL PB AMP
CT10
CTL HEAD
REC
SET UP1
PB
CLOG
SET UP2
AUDIO REC
BIAS
BRKE ON/OFF
PINCH ON/OFF
IN LOAD/UN LOAD
CSWO
PB CTL
DEW SENS
STB SW
T FG
TADE END
PB SELECT
BATT DWN
EJECT
C IN
L END
REC
CC DWN
PW CTRL
S980
D901
TAPE END SENS
S401
S301
S303
S930
S302
SYSTEM CONTROL BLOCK
BRAKE SOLENOID
PINCH SOLENOID
LOADING MOTOR
DRUM PG
DRUM SERVO CIRCUIT
PG COIL
DRUM MOTOR
DRUM OUT
DRUM PG
TALLY LED
REC MUTE
STAND BY LED
DEW LED
CLOG
D981 REC BATT
TALLY
D980 STAND BY
D982 DEW
D983 CAUTION
CAUTION
J901 EXTDC
BATT 9.6V
F901
SYSTEM CONTROL BLOCK POWER SUPPLY
9.6V
9V
9V
5V
5V
CAMERA BLOCK POWER SUPPLY
7.5V
5V
280V
243V
95V
120V
50V
-52V
-1.4V
-4.6V
CONSTANT CURRENT CIRCUIT
TO HEATER

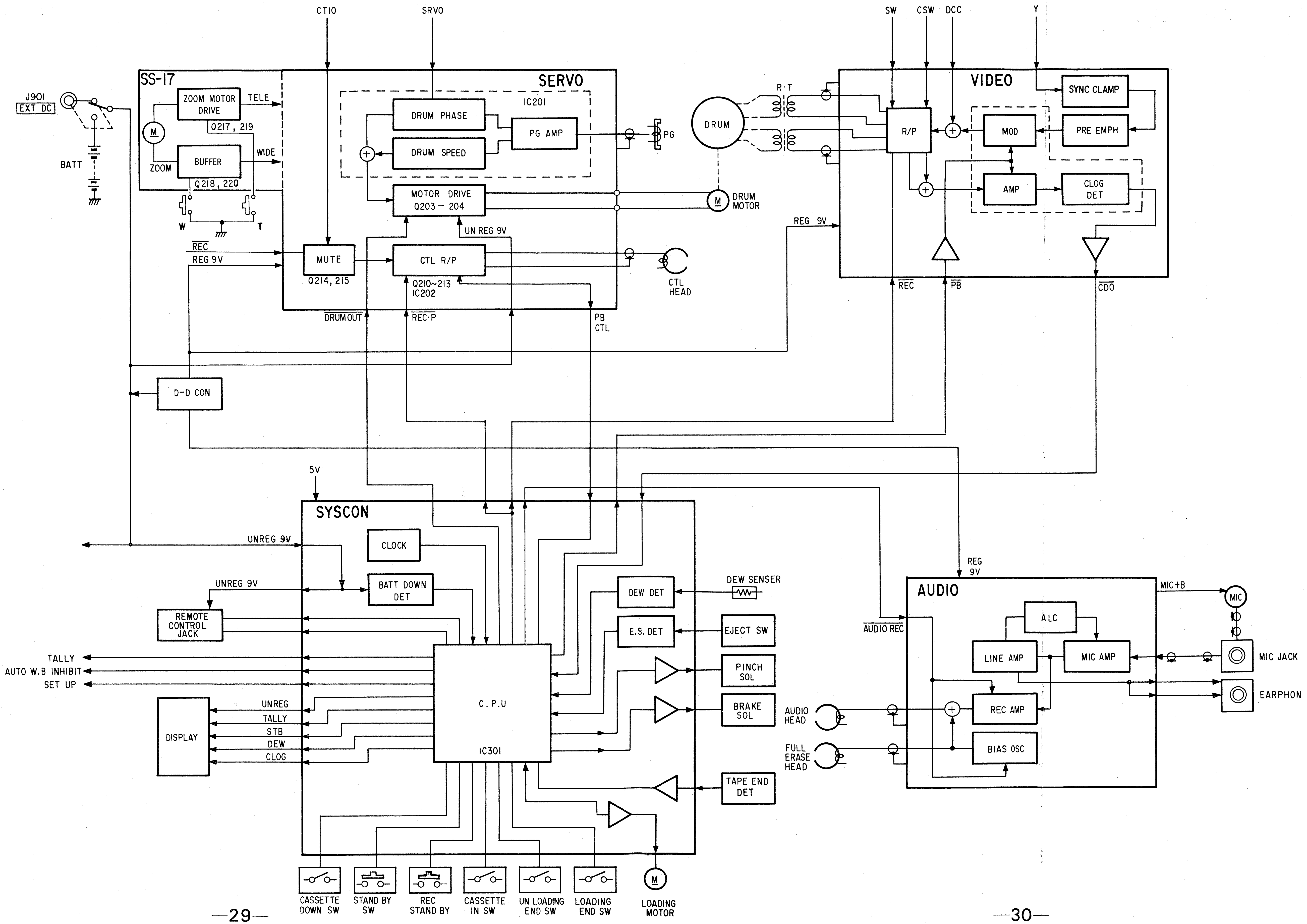
3-3. CAMERA BLOCK DIAGRAM



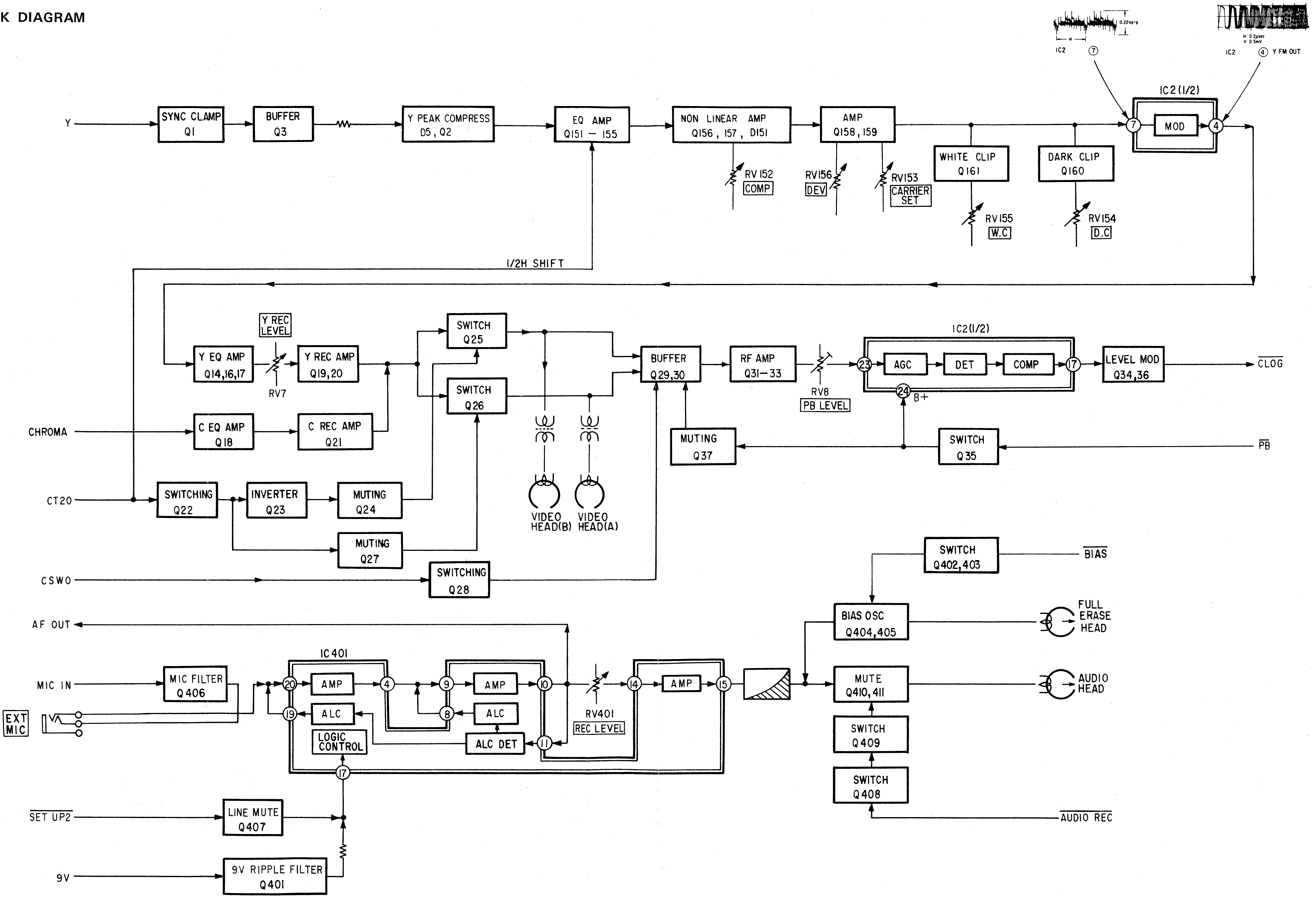
VC-2
PA-1
GC-5
GC-4
PRE AMP Q801~805
SW Q806~808
SW Q809, 810
SMF TRINICON TUBE
T2
T1
G4
FOCUS COIL
IRIS MOTOR DRIVE COIL
BUFF Q702
SWITCHING Q701
IC501 (TP501) ① (PA)
0.6Vp-p
IC501 ③
5Vp-p
IC501 ⑤
1.4Vp-p
IC501 ⑥
6Vp-p
BM CLP
CLAMP
BLANKING DARK CLIP LINEAR CLIP
IC501
RV501 DARK CLIP
BUFF Q523
IC502 ㉘
14Vp-p
H.DEF
CLAMP
AGC
GAIN SELECT
IC502(1/2)
IC502 ㉖
2.4Vp-p
Y·γ
IC502 ㉗
0.1Vp-p
RV504 AGC
D505
FL501 TRAP
BUFF Q501
CLAMP Q502
IC502 ⑲
1.7Vp-p
+7.5V
LIMITTER Q503
RV502 W.C
IC502 ⑮
1Vp-p
LIMITTER Q505
BUFF Q506
D506 (1/2)
RV503 CN
D503
BUFF Q504
RV506 Y-LEVEL
VIDEO AMP Q507
DL501
GC-2 BOARD ⑬ PIN
0.44Vp-p
VIDEO AMP Q508 Q651
0.15DL
DL502
D506(1/2)
RV507 BN
IC503(1/2)
LIMITER
BASE NOISE CLIPPER
HPF
IC504
IC502 ③
1.1Vp-p
IC502(1/2)
H.DEF
SYNC
BLK
Y+SYNC
CLAMP
Y LINEAR CLIP
IC507(W/B)
POWER BACKUP
POWER ON RESET CIRCUIT
D/A
D F/F
CONTROL CIRCUIT
VDD DET
RV517 A W/B-R
IC502 (TP506) ② Y OUT
1Vp-p
IC506 ⑨ B-Y
1.6Vp-p
BUFF Q519
D511
AMP Q518
RV522 LLA
RV524 W IRIS
SWITCHING Q516
AMP Q517
RV525 W.AGC
RV523 IRIS
V.DEF
PRE BLK Q521,628
SWITCHING Q515,531
IC505 ③
0.1Vp-p
HPF
RV508 CHROMA LEVEL
IC505
L504
1H DL
RV509
CHROMA/INDEX SEPARATE
IC505 ⑤
0.6Vp-p
IC505 ⑧
0.05Vp-p
IC505 ①
0.8Vp-p
RV510 CHROMA PHASE CORRECTION
IC506
LINEAR MUTIPLIER
PHASE ALTERNATOR
L507 CHROMA CANCEL
DL
MIX AMP Q509,510
RV526 INDEX PHASE CORRECTION
LIMITER
PHASE DET
DC GAIN CONTROL
WAVEFORM SHAPER
LPF
BUFF Q512
BUFF Q511
RV515 R-Y LEVEL
RV514 W/B(B-Y)
RV513 W/B(R-Y)
RV519 CBB
CLAMP Q514
RV518 CBR
CLAMP Q513
0.8Vp-p
RV512 V.PHASE
RV511 H.PHASE
BUFF Q522
IC506 ④
1Vp-p
ALT
IC506 ㉑
2Vp-p
IC701 ⑤
8.8Vp-p
BLK
IC506 ⑮ R-Y
1.3Vp-p
IC702 ⑤
2.6Vp-p
IC703
7.5V
REG Q703,704
-4.6V
-5.6V
REG Q705
RV701 FOCUS
RV706 TA
120V
INDEX ALT
ALT
H.DEF
V.DEF
AMP Q706,707
LIMITTER D707
D701
RV704 X5-B
BUFF Q708
SWITCHING Q710
AMP Q711
B.BLK
+120V
AMP Q716
AMP Q717,718
SWITCHING Q719,D519
RV702 X2-B
AMP Q720
SWITCHING Q524
G2
CAUTION LED (TO SS-17BOARD)
CAUTION (OVF)
G1
IC701 ④
88Vp-p
+243V
+95V
H(+)DRIVE
H(-)DRIVE
IC701
RV709 H.CENTER
RV707 H.C
RV708 H.BALANCE
T701
IC701 ⑦,⑮
3Vp-p
IC701 ⑫
92Vp-p
IC701 ⑨
0.3Vp-p
2.7Vp-p
IC701 ②,⑩
IC701 ⑬
12Vp-p
IC701 ⑥
6Vp-p
IC701 ⑭
8.4Vp-p
H(+) H(-)
IC702 ③,④
72Vp-p
BUFF Q713
V(+)DRIVE
V(-)DRIVE
IC702
RV712 V.CENTER
RV710 V.S
RV711 V.BALANCE
T702
IC702 ⑫
76Vp-p
REG Q712,715
IC704
RV703 1H
IC702 ⑬
2Vp-p
IC702 ⑭
2Vp-p
V(+) V(-)
HE(-) HE(+)
BUFF Q714
HV-701
+243V 243V
+95V 95V
+120V 120V
+50V 50V
-52V -52V
-5.6V -5.6V
1.3V
280V
7.5V
G4
IC702 ⑥
17Vp-p
+7.5V
RV851 7.5V
D851
SR701
SWR
5V


IC502 (TP506) ② Y OUT
IC502 ⑮
RV502 W/C
LIMITTER Q505
BUFF Q506
D506 (1/2)
RV503 CN
GC-2 BOARD ⑬ PIN
IC502 ③
BUFF Q504
D503
Y-γ
RV506 Y-LEVEL
VIDEO AMP Q507
DL501
CLAMP Q502
H.DEF
IC505 ⑤
GC-5
VIDEO AMP Q508 Q651
IC503(1/2)
IC504
LIMITER
BASE NOISE CLIPPER
HPF
0.15DL
DL502
D506(1/2)
RV507 BN
IC506 ⑨ B-Y
H.DEF
SYNC
BLK
Y+SYNC
CLAMP
Y LINEAR CLIP
IC502(1/2)
IC507(W/B)
POWER BACKUP
POWER ON RESET CIRCUIT
D/A
D F/F
CONTROL CIRCUIT
SWITCH CIRCUIT
VDD DET
RV517 A W/B-R
RV516 A W/B-B
WHITE BALANCE
VDD
FILTER
GC-4 BOARD ⑭ PIN
D502
D518
SWITCHING Q520
LOWLIGHT (OVF)
Y+SYNC
TALLY (OVF)
TALLY LED (FROM SS-17 BOARD)
SETUP 1
W/B (OVF)
CHROMA+BURST
IC851 ⑭ V.DEF
IC851 ⑮ H.DEF
LPF
LIMITTER AMP Q652,527 (Q525,526)
GC-3
X652
PLL IC651
TP514 CHROMA OUT
IC851 ㉜
SRVO
CT20
CT10
CSWO
PAL 90°
PAL 0°
X21
X2PD
X20
V.DEF
H.DEF
BM CLP
B.BLK
VD
HD
SYNC
BLK
ALT
IC851
X11
X10
X651
IC851 ㊲
PAL-BO
PAL-PBO
IC851 ⑳ HD
IC851 ㉑ SYNC
IC851 ⑯,⑰
BPF
MAX AMP Q529,530
RV521 BURST
IC851 ⑱
CHROMA
GC-4
RV519 CBB
CLAMP Q514
RV518 CBR
CLAMP Q513
BAL MOD
GAIN CONT
BLKG CLEAN
PHASE ALT
BURST GATE
IC508
BLK
L507
CHROMA CANCEL
DL
MIX AMP Q509,510
RV526
INDEX PHASE CORRECTION
RV510 CHROMA PHASE CORRECTION
IC506 ⑤
IC505
LINEAR MUTIPLIER
PHASE ALTERNATOR
LIMITER
PHASE DET
DC GAIN CONTROL
WAVEFORM SHAPER
IC506
LPF
BUFF Q512
BUFF Q511
RV515 R-Y LEVEL
RV514 W/B(B-Y)
RV513 W/B(R-Y)
L504
CHROMA/INDEX SEPARATE
IH DL
RV509
RV512 V.PHASE
RV511 H.PHASE
BUFF Q522
IC506 ④
IC506 ㉑
IC701 ⑤
IC506 ⑮ R-Y
IC702 ⑤
ALT
H.DEF
V.DEF
T701
+243V
+95V
H(+)DRIVE
H(-)DRIVE
IC701
RV709 H.CENTER
RV707 H.C
RV708 H.BALANCE
LIMITTER D707
BUFF Q708
SWITCHING Q710
AMP Q711
B.BLK
BUFF Q713
IC701 ④
IC702 ③,④
IC701 ⑦,⑮
IC701 ⑥
IC701 ⑨
IC701 ②,⑩
IC701 ⑬
IC701 ⑭
T702
V(+)DRIVE
V(-)DRIVE
IC702
RV712 V.CENTER
RV710 V.S
RV711 V.BALANCE
BUFF Q714
REG Q712,715
IC704
RV703 IH
IC702 ⑫
IC702 ⑬
IC702 ⑥
IC702 ⑭
HV-701
+243V 243V
+95V 95V
+120V 120V
+50V 50V
-52V -52V
-5.6V -5.6V
1.3V
280V
7.5V
+7.5V
RV851 7.5V
IC852
REG OUT Q851
CLAMP Q852
9.6V
D851
SR701
SWR
5V
IC509
SAWTOOTH FORMER
SWITCHING Q521,528
IC509 ⑪
IC509 ①
IC509 ⑫
IC509 ⑬
IC509 ②
H.DEF
SETUP 2
G1
H(+) H(-)
V(+) V(-)
HE(-) HE(+)
G4

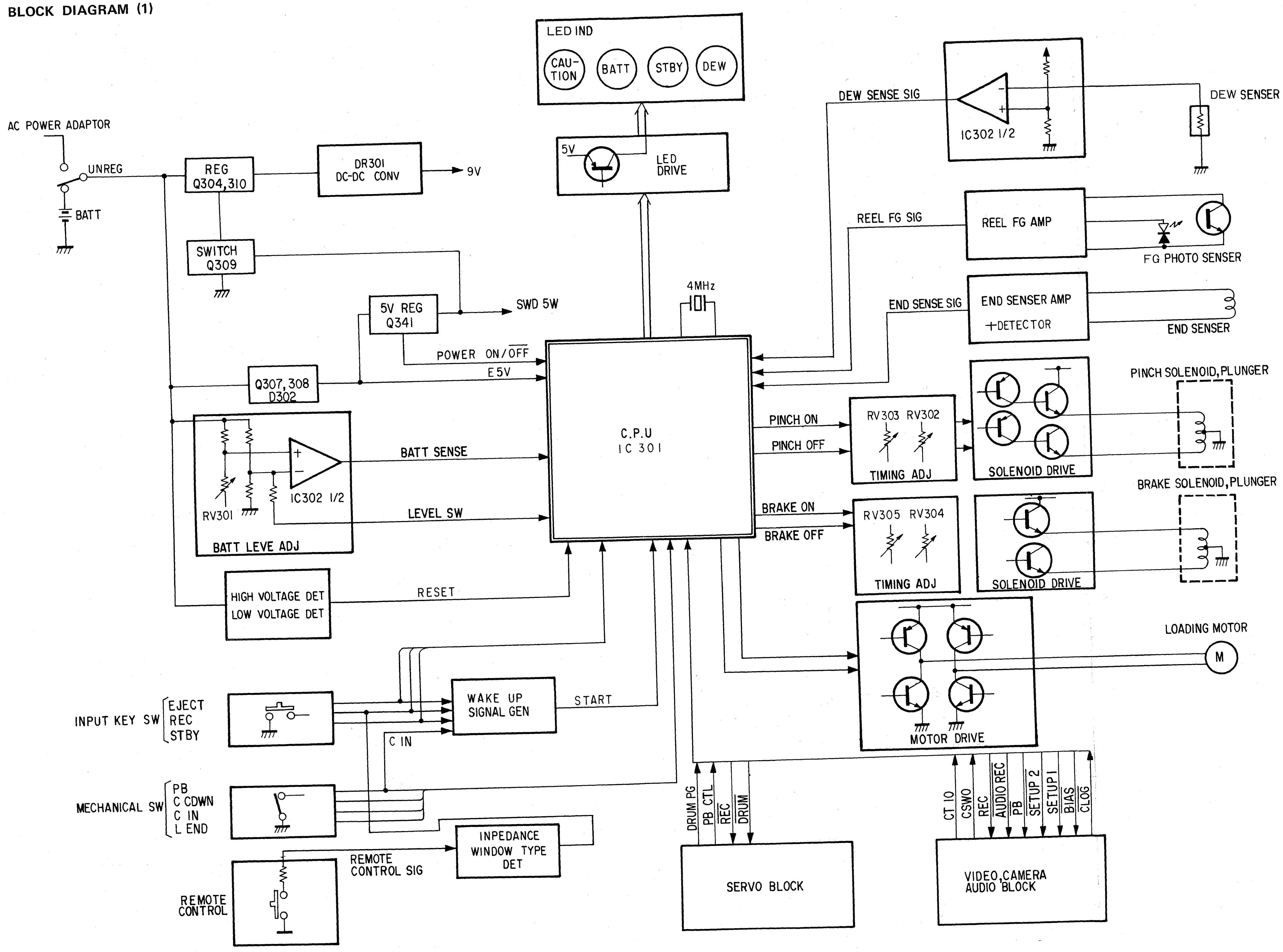
3-4. VIDEO BLOCK DIAGRAM (INCLUDING SERVO BLOCK DIAGRAM)


CTIO
SRVO
SW
CSW
DCC
Y
J901
EXT DC
BATT
SS-17
ZOOM MOTOR DRIVE
TELE
Q217, 219
M
ZOOM
BUFFER
WIDE
Q218, 220
W
T
SERVO
DRUM PHASE
IC201
PG AMP
DRUM SPEED
PG
MOTOR DRIVE
Q203 – 204
UN REG 9V
REC
REG 9V
MUTE
Q214, 215
CTL R/P
Q210~213
IC202
CTL HEAD
DRUM OUT
REC·P
PB CTL
DRUM
R·T
DRUM MOTOR
VIDEO
SYNC CLAMP
R/P
MOD
PRE EMPH
AMP
CLOG DET
REG 9V
REC
PB
CDO
D-D CON
5V
SYSCON
CLOCK
UNREG 9V
BATT DOWN DET
UNREG 9V
REMOTE CONTROL JACK
TALLY
AUTO W.B INHIBIT
SET UP
DISPLAY
UNREG
TALLY
STB
DEW
CLOG
C.P.U
IC301
DEW DET
DEW SENSER
E.S. DET
EJECT SW
PINCH SOL
BRAKE SOL
TAPE END DET
CASSETTE DOWN SW
STAND BY SW
REC STAND BY
CASSETTE IN SW
UN LOADING END SW
LOADING END SW
LOADING MOTOR
REG 9V
AUDIO
AUDIO REC
ALC
LINE AMP
MIC AMP
MIC+B
MIC
MIC JACK
EARPHON
AUDIO HEAD
FULL ERASE HEAD
REC AMP
BIAS OSC

3-5. VIDEO, AUDIO BLOCK DIAGRAM

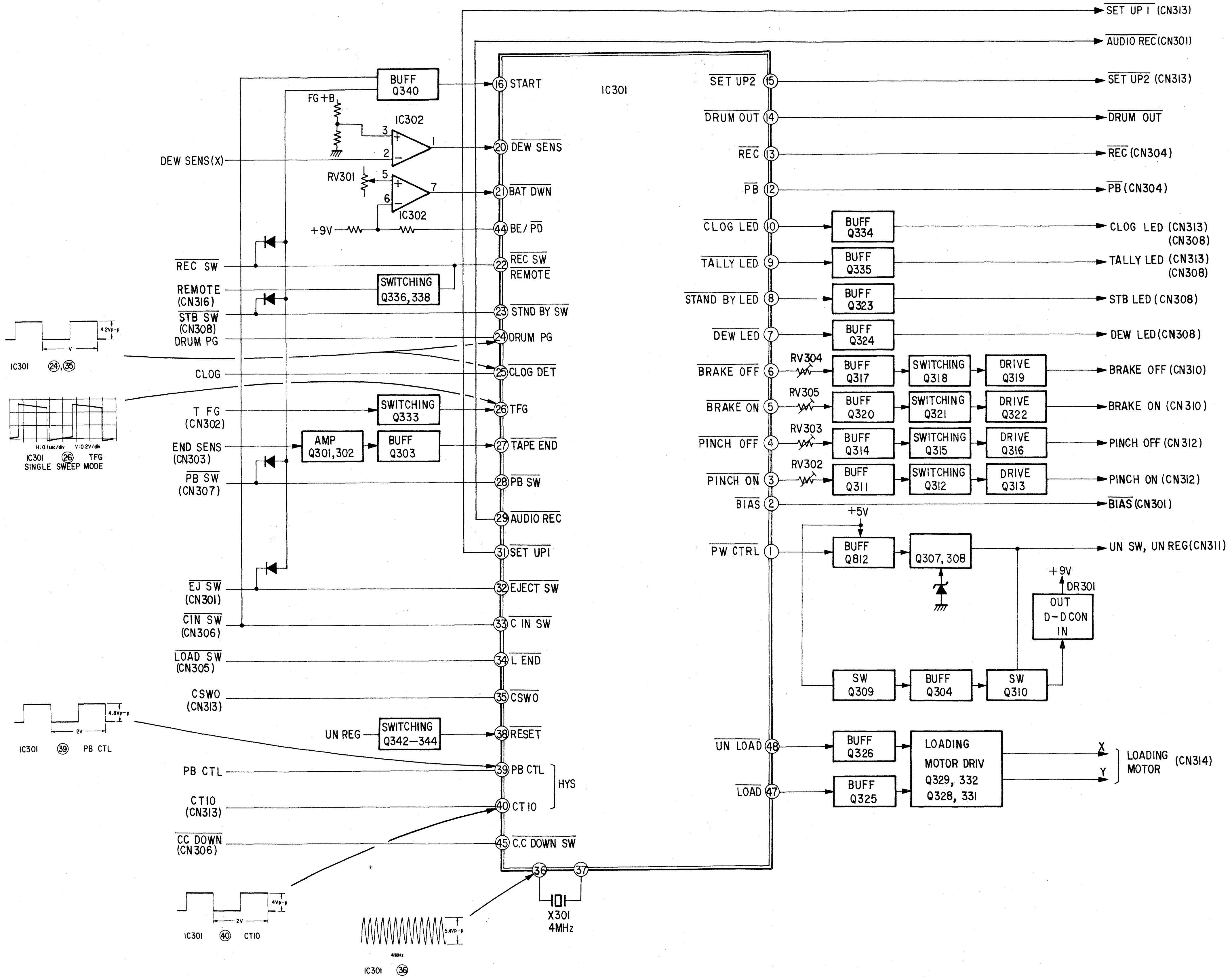

IC2 ⑦
0.22Vp-p
H
IC2 ④ Y FM OUT
H: 0.2μsec
V: 0.5mV
Y
SYNC CLAMP Q1
BUFFER Q3
Y PEAK COMPRESS D5, Q2
EQ AMP Q151 — 155
NON LINEAR AMP Q156, 157, D151
AMP Q158, 159
WHITE CLIP Q161
DARK CLIP Q160
IC2 (1/2)
MOD
RV152 COMP
RV156 DEV
RV153 CARRIER SET
RV155 W.C
RV154 D.C
1/2H SHIFT
Y REC LEVEL
Y EQ AMP Q14,16,17
RV7
Y REC AMP Q19,20
SWITCH Q25
SWITCH Q26
BUFFER Q29,30
RF AMP Q31—33
RV8 PB LEVEL
IC2(1/2)
AGC
DET
COMP
B+
LEVEL MOD Q34,36
CLOG
CHROMA
C EQ AMP Q18
C REC AMP Q21
MUTING Q37
SWITCH Q35
PB
CT20
SWITCHING Q22
INVERTER Q23
MUTING Q24
MUTING Q27
VIDEO HEAD(B)
VIDEO HEAD(A)
CSWO
SWITCHING Q28
SWITCH Q402,403
BIAS
BIAS OSC Q404,405
FULL ERASE HEAD
AF OUT
IC401
MIC IN
MIC FILTER Q406
EXT MIC
AMP
ALC
LOGIC CONTROL
ALC DET
RV401 REC LEVEL
MUTE Q410, 411
AUDIO HEAD
SWITCH Q409
SWITCH Q408
AUDIO REC
SET UP2
LINE MUTE Q407
9V
9V RIPPLE FILTER Q401

3-6. SYSTEM CONTROL BLOCK DIAGRAM (1)

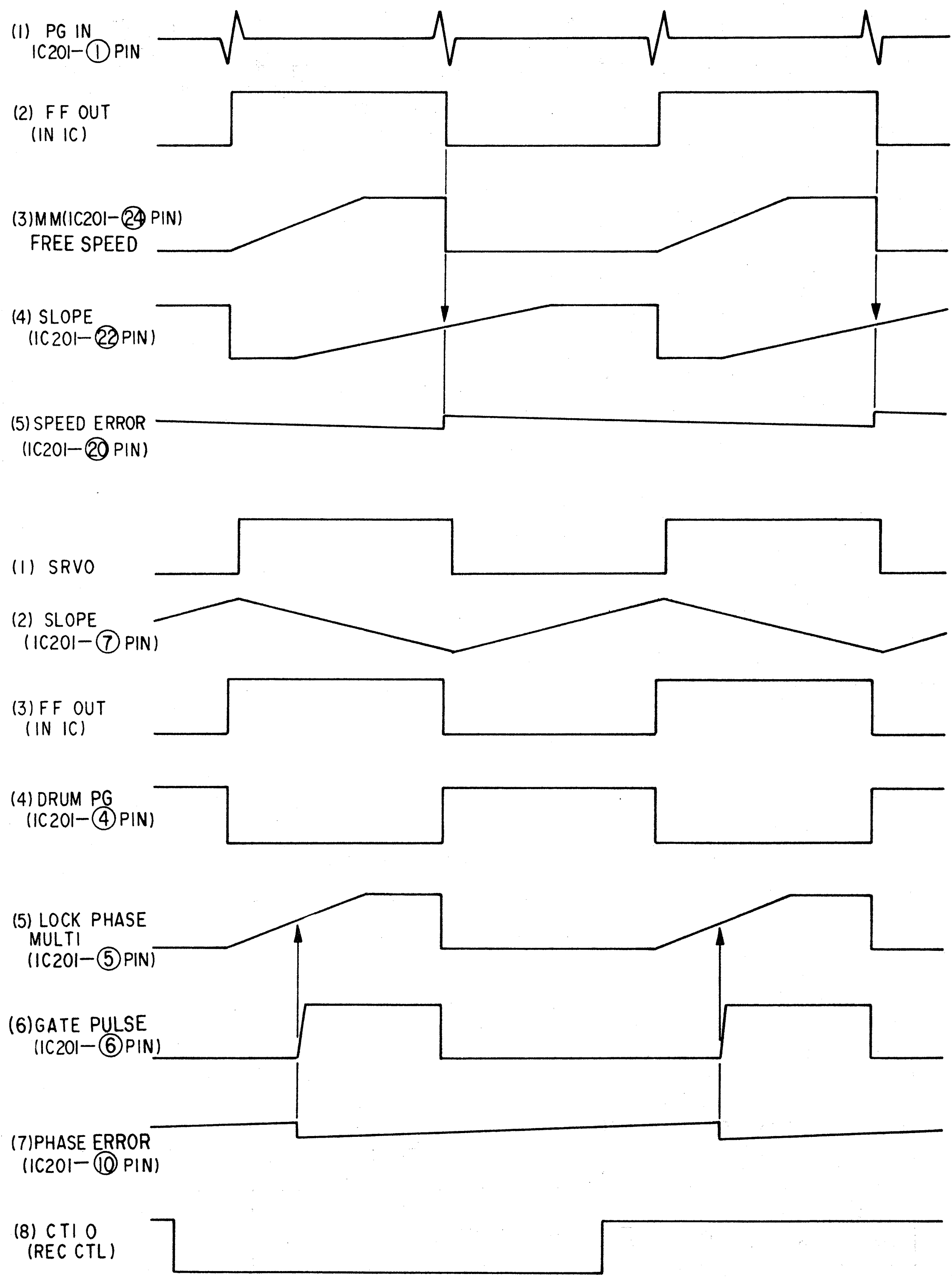


LED IND
CAU-TION
BATT
STBY
DEW
5V
LED DRIVE
AC POWER ADAPTOR
UNREG
BATT
REG Q304,310
DR301 DC-DC CONV
9V
SWITCH Q309
5V REG Q341
SWD 5W
POWER ON/OFF
E5V
Q307,308 D302
BATT SENSE
LEVEL SW
RV301
IC302 1/2
BATT LEVE ADJ
HIGH VOLTAGE DET
LOW VOLTAGE DET
RESET
4MHz
C.P.U
IC 301
DEW SENSE SIG
IC302 1/2
DEW SENSER
REEL FG SIG
REEL FG AMP
FG PHOTO SENSER
END SENSE SIG
END SENSER AMP +DETECTOR
END SENSER
PINCH ON
PINCH OFF
RV303 RV302
TIMING ADJ
SOLENOID DRIVE
PINCH SOLENOID, PLUNGER
BRAKE ON
BRAKE OFF
RV305 RV304
TIMING ADJ
SOLENOID DRIVE
BRAKE SOLENOID, PLUNGER
LOADING MOTOR
M
MOTOR DRIVE
INPUT KEY SW
EJECT
REC
STBY
WAKE UP SIGNAL GEN
START
C IN
MECHANICAL SW
PB
C CDWN
C IN
L END
INPEDANCE WINDOW TYPE DET
REMOTE CONTROL SIG
REMOTE CONTROL
DRUM PG
PB CTL
REC
DRUM
SERVO BLOCK
CT 10
CSWO
REC
AUDIO REC
PB
SETUP 2
SETUP 1
BIAS
CLOG
VIDEO, CAMERA AUDIO BLOCK

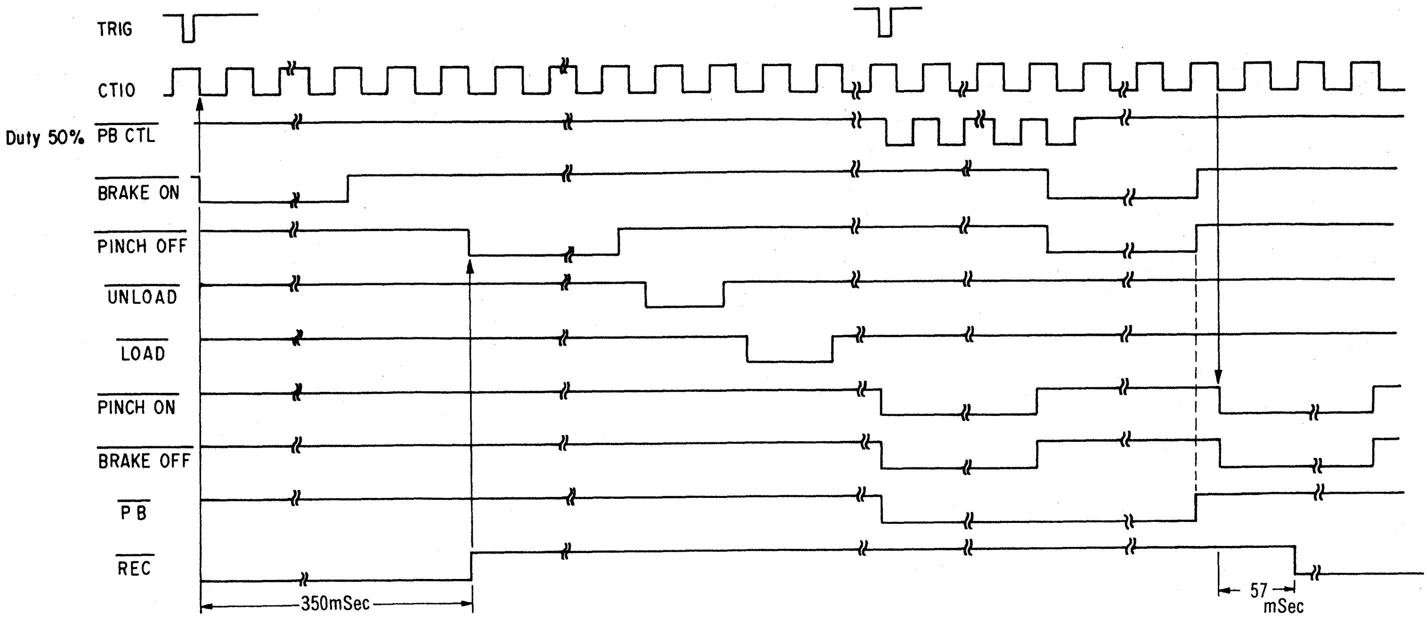
3-7. SYSTEM CONTROL BLOCK DIAGRAM (2)


IC301
BUFF Q340
FG+B
IC302
DEW SENS(X)
RV301
+9V
REC SW
REMOTE (CN316)
SWITCHING Q336,338
STB SW (CN308)
DRUM PG
CLOG
T FG (CN302)
SWITCHING Q333
END SENS (CN303)
AMP Q301,302
BUFF Q303
PB SW (CN307)
EJ SW (CN301)
CIN SW (CN306)
LOAD SW (CN305)
CSWO (CN313)
UN REG
SWITCHING Q342–344
PB CTL
CTIO (CN313)
CC DOWN (CN306)
16 START
20 DEW SENS
21 BAT DWN
44 BE/PD
22 REC SW REMOTE
23 STND BY SW
24 DRUM PG
25 CLOG DET
26 TFG
27 TAPE END
28 PB SW
29 AUDIO REC
31 SET UP1
32 EJECT SW
33 C IN SW
34 L END
35 CSWO
38 RESET
39 PB CTL
40 CT IO
HYS
45 C.C DOWN SW
36
37
X301 4MHz
SET UP2 15
DRUM OUT 14
REC 13
PB 12
CLOG LED 10
TALLY LED 9
STAND BY LED 8
DEW LED 7
BRAKE OFF 6
BRAKE ON 5
PINCH OFF 4
PINCH ON 3
BIAS 2
PW CTRL 1
UN LOAD 48
LOAD 47
BUFF Q334
BUFF Q335
BUFF Q323
BUFF Q324
RV304
BUFF Q317
SWITCHING Q318
DRIVE Q319
RV305
BUFF Q320
SWITCHING Q321
DRIVE Q322
RV303
BUFF Q314
SWITCHING Q315
DRIVE Q316
RV302
BUFF Q311
SWITCHING Q312
DRIVE Q313
+5V
BUFF Q812
Q307, 308
+9V
DR301
OUT D-DCON IN
SW Q309
BUFF Q304
SW Q310
BUFF Q326
BUFF Q325
LOADING MOTOR DRIV Q329, 332 Q328, 331
SET UP 1 (CN313)
AUDIO REC (CN301)
SET UP2 (CN313)
DRUM OUT
REC (CN304)
PB (CN304)
CLOG LED (CN313) (CN308)
TALLY LED (CN313) (CN308)
STB LED (CN308)
DEW LED (CN308)
BRAKE OFF (CN310)
BRAKE ON (CN310)
PINCH OFF (CN312)
PINCH ON (CN312)
BIAS (CN301)
UN SW, UN REG (CN311)
X
Y
LOADING MOTOR (CN314)
4.2Vp-p
V
IC301 24, 35
H:0.1sec/div V:0.2V/div
IC301 26 TFG SINGLE SWEEP MODE
4.8Vp-p
2V
IC301 39 PB CTL
4Vp-p
2V
IC301 40 CTIO
5.4Vp-p
4MHz
IC301 36

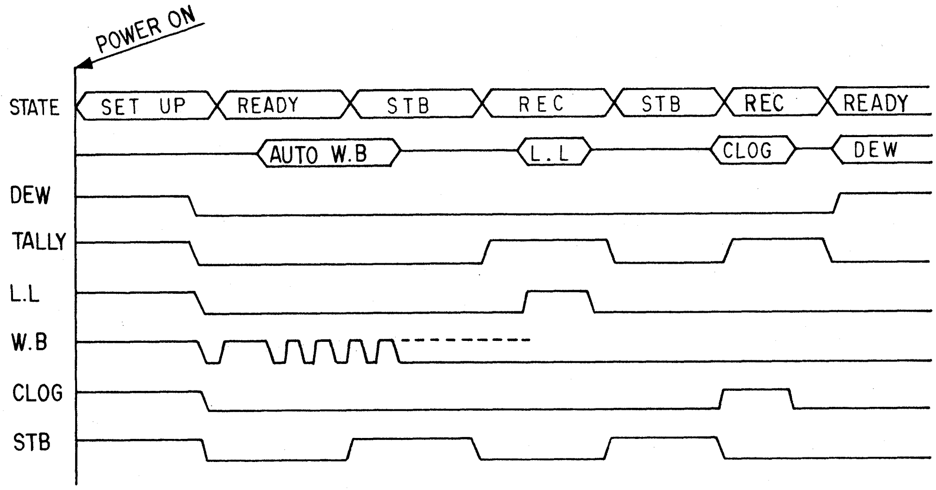
3-8. SERVO TIMING CHART


(1) PG IN
IC201-① PIN
(2) F F OUT
(IN IC)
(3) M M (IC201-㉔ PIN)
FREE SPEED
(4) SLOPE
(IC201-㉒ PIN)
(5) SPEED ERROR
(IC201-⑳ PIN)
(1) SRVO
(2) SLOPE
(IC201-⑦ PIN)
(3) F F OUT
(IN IC)
(4) DRUM PG
(IC201-④ PIN)
(5) LOCK PHASE
MULTI
(IC201-⑤ PIN)
(6) GATE PULSE
(IC201-⑥ PIN)
(7) PHASE ERROR
(IC201-⑩ PIN)
(8) CTl 0
(REC CTL)

3-9. LINKED SHOOTING TIMING CHART


TRIG
CTIO
Duty 50%
PB CTL
BRAKE ON
PINCH OFF
UNLOAD
LOAD
PINCH ON
BRAKE OFF
PB
REC
350mSec
57 mSec

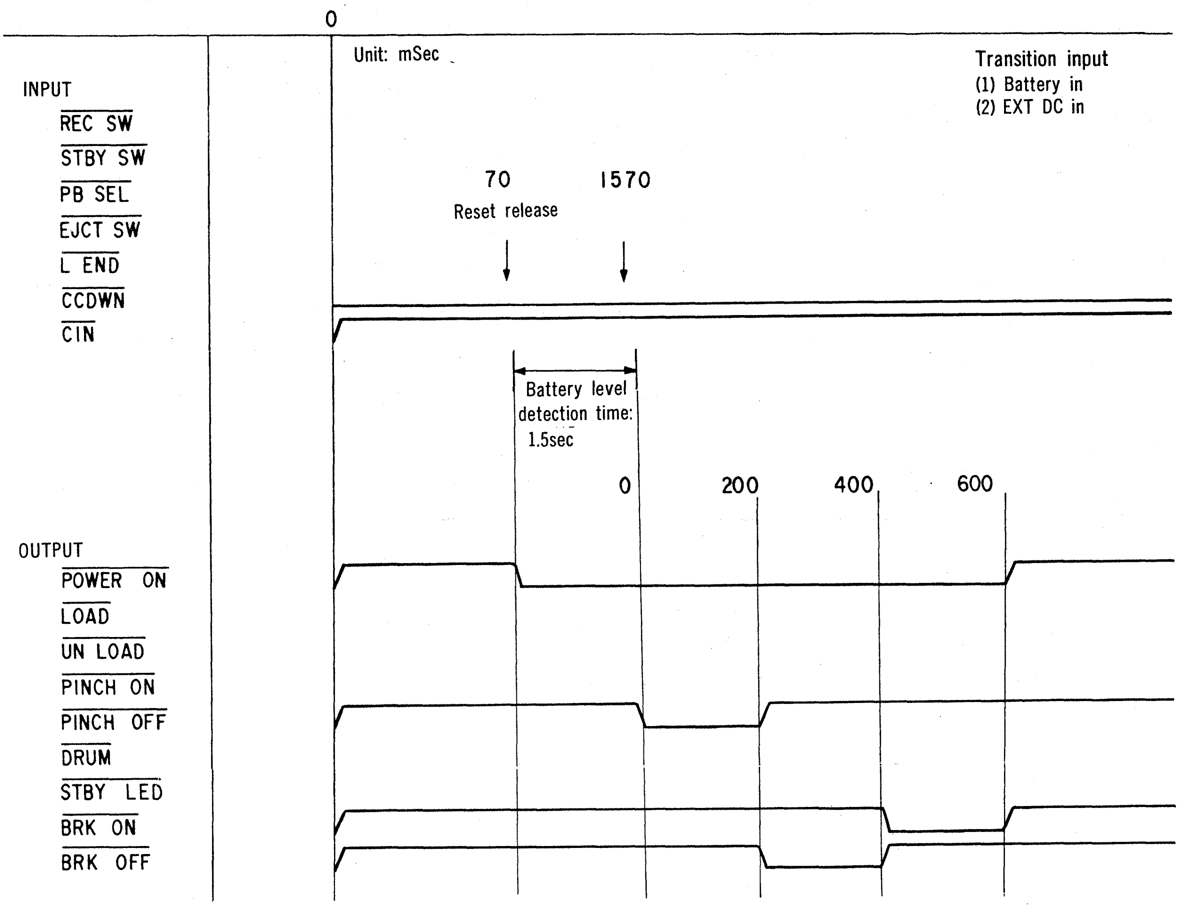
3-10. WARNING TIMING CHART


POWER ON
STATE
SET UP
READY
STB
REC
STB
REC
READY
AUTO W.B
L.L
CLOG
DEW
DEW
TALLY
L.L
W.B
CLOG
STB

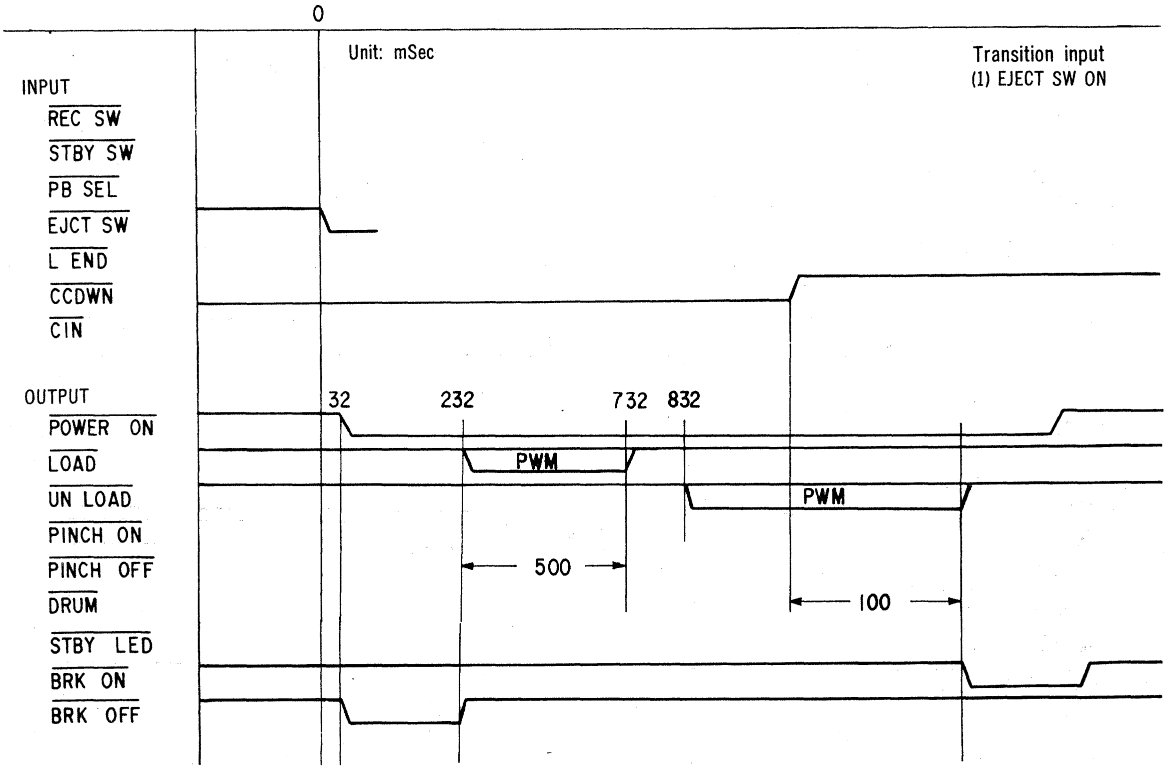
○ TURN-ON ◑ BLINK

INDICATION / WARNING item	DEW	TALLY	L.L	W.B	CAUTION	
DEW	○					
BATTERY POWER REMAINED		◑ 1Hz				
BATTERY DOWN		◑ 5Hz				
LOW LIGHT			○			
W.B NG/UNPROCESSED				○		
AUTO W.B OPERATION				◑ 15Hz		
CLOG					◑ 1Hz	
BEAM					○	

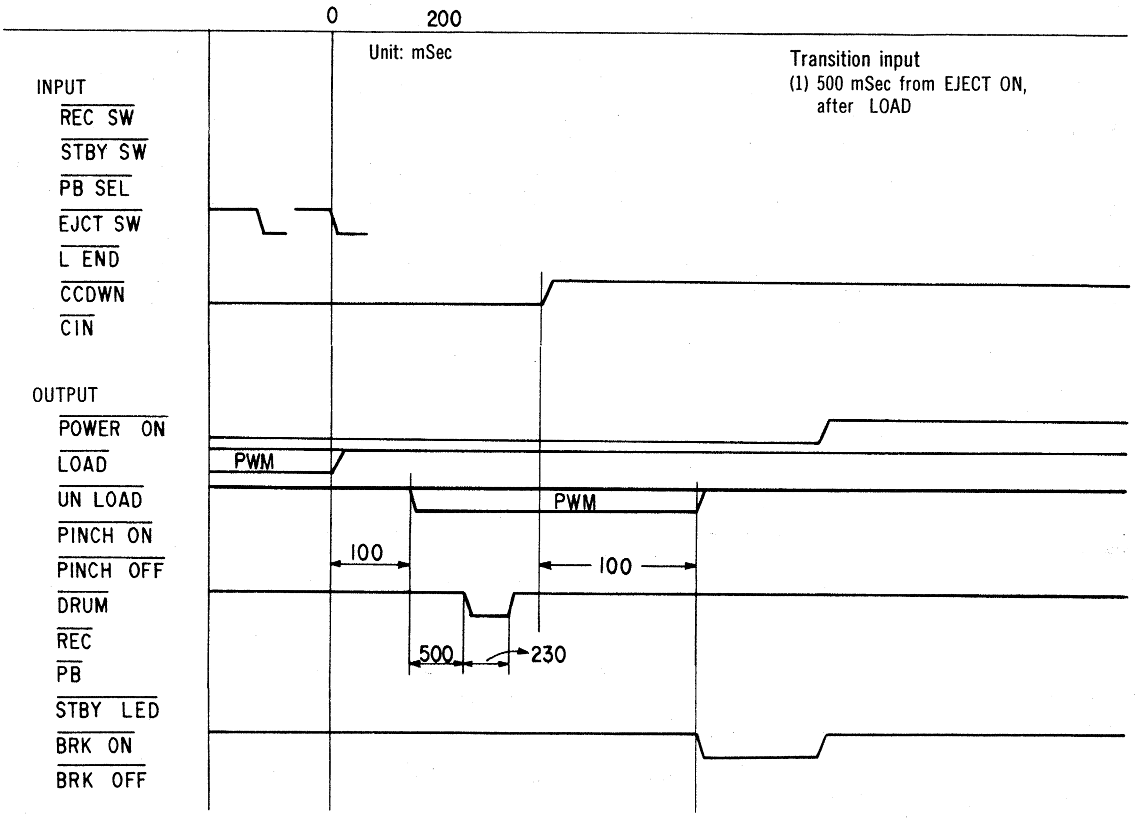
3-11-1. ALL OFF→HOLDER DOWN TIMING CHART


0
Unit: mSec
Transition input
(1) Battery in
(2) EXT DC in
INPUT
REC SW
STBY SW
PB SEL
EJCT SW
L END
CCDWN
CIN
70
Reset release
1570
Battery level detection time: 1.5sec
0
200
400
600
OUTPUT
POWER ON
LOAD
UN LOAD
PINCH ON
PINCH OFF
DRUM
STBY LED
BRK ON
BRK OFF

3-11-2. HOLDER DOWN→HOLDER UP TIMING CHART

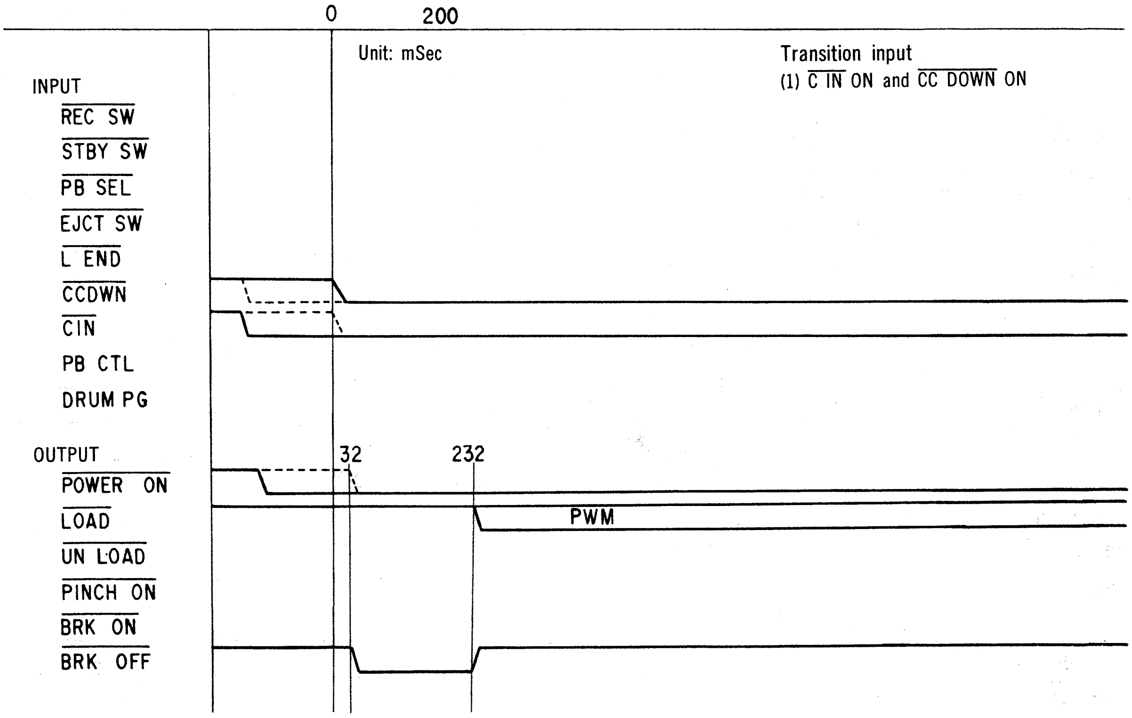

0
Unit: mSec
Transition input
(1) EJECT SW ON
INPUT
REC SW
STBY SW
PB SEL
EJCT SW
L END
CCDWN
CIN
OUTPUT
32
232
732
832
POWER ON
LOAD
PWM
UN LOAD
PWM
PINCH ON
PINCH OFF
500
DRUM
100
STBY LED
BRK ON
BRK OFF

3-11-3. LOAD→UNLOAD→HOLDER UP TIMING CHART


Unit: mSec

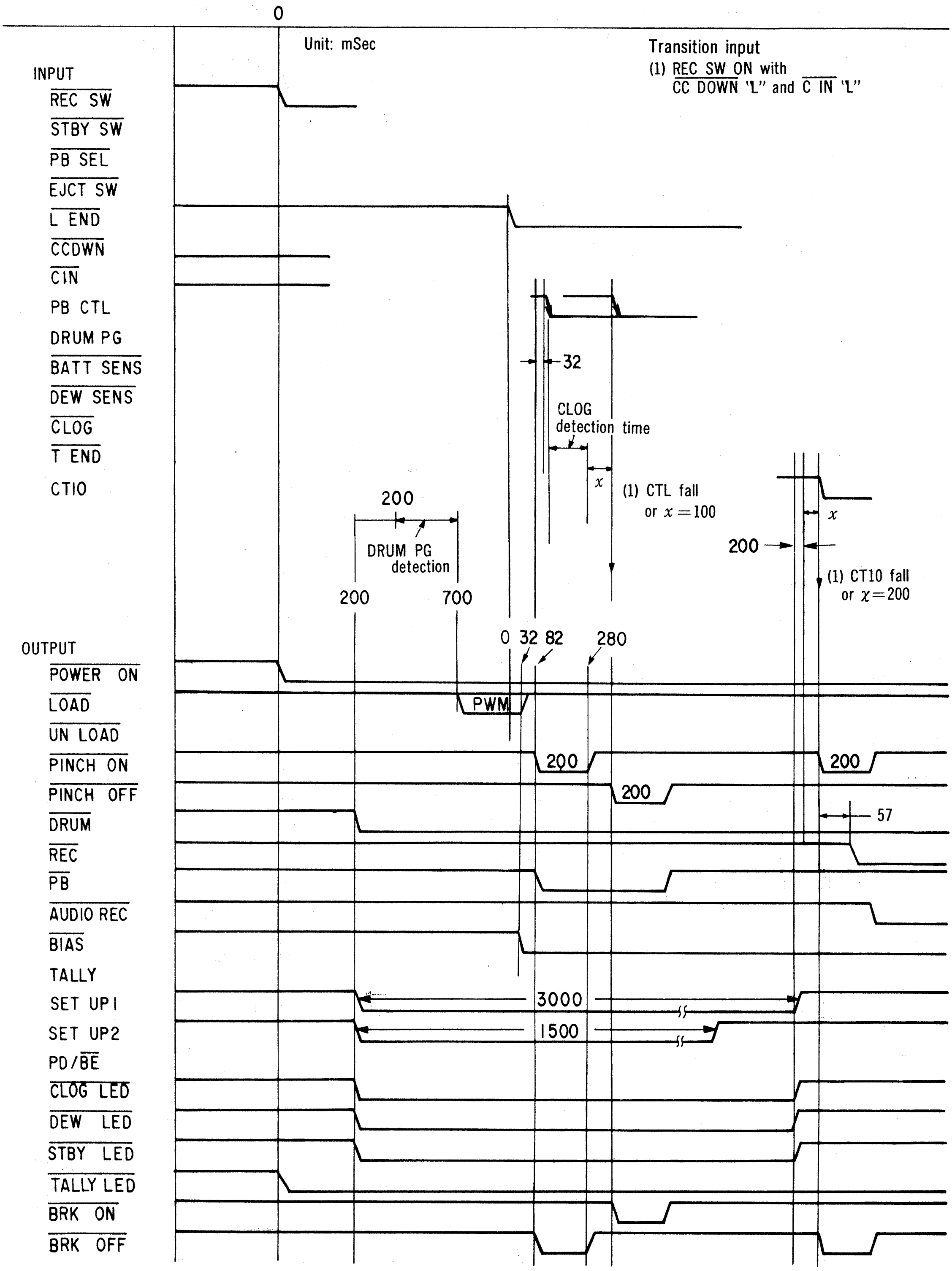
Transition input
(1) 500 mSec from EJECT ON,
after LOAD

3-11-4. HOLDER DOWN→LOAD TIMING CHART

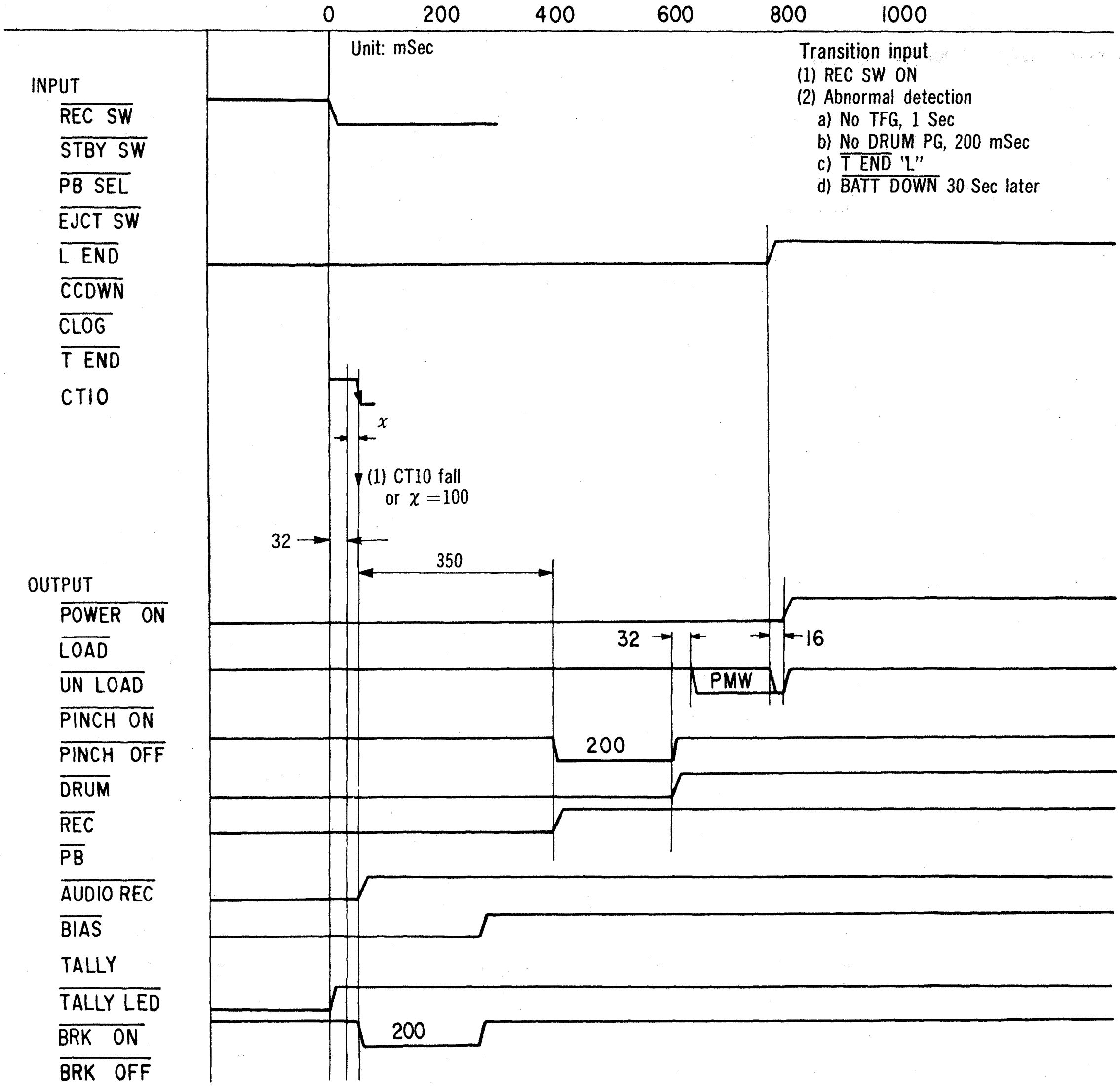

Unit: mSec

Transition input
(1) C IN ON and CC DOWN ON

3-11-5. READY→REC TIMING CHART

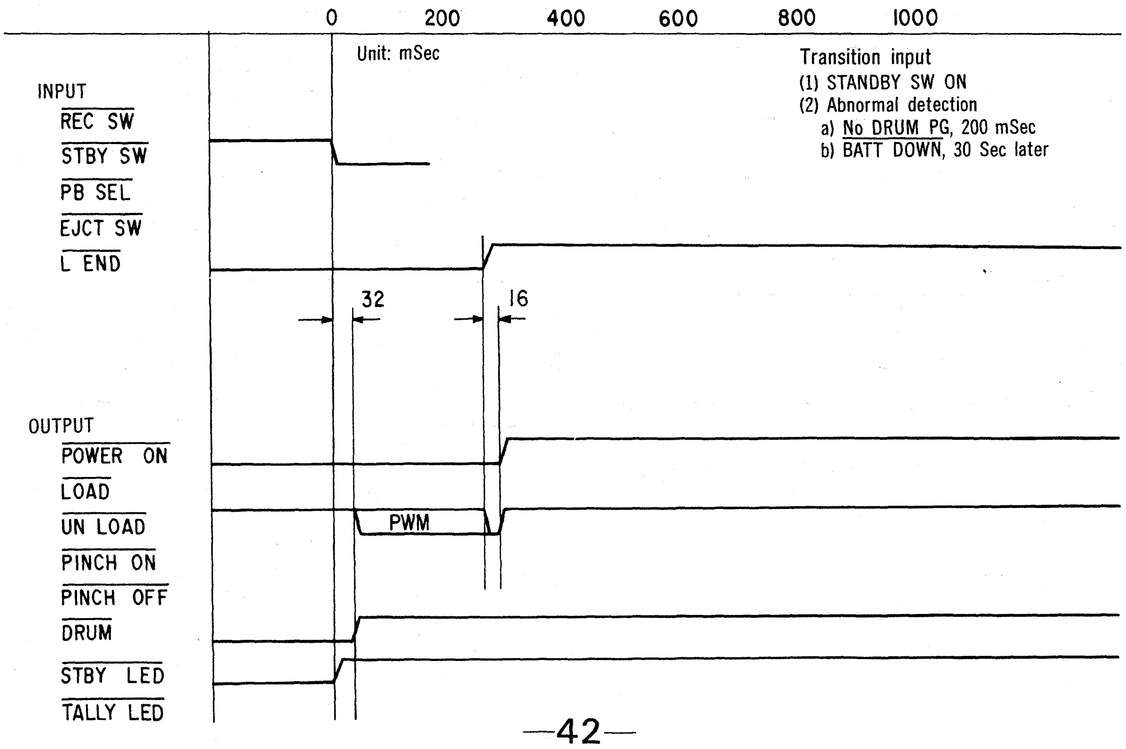

0
Unit: mSec
Transition input
(1) REC SW ON with
CC DOWN 'L" and C IN 'L"
INPUT
REC SW
STBY SW
PB SEL
EJCT SW
L END
CCDWN
CIN
PB CTL
DRUM PG
BATT SENS
DEW SENS
CLOG
T END
CTIO
32
CLOG
detection time
x
(1) CTL fall
or x = 100
200
DRUM PG
detection
200
700
200
x
(1) CT10 fall
or x = 200
0 32 82 280
OUTPUT
POWER ON
LOAD
PWM
UN LOAD
PINCH ON
200
200
PINCH OFF
200
DRUM
57
REC
PB
AUDIO REC
BIAS
TALLY
SET UP1
3000
SET UP2
1500
PD/BE
CLOG LED
DEW LED
STBY LED
TALLY LED
BRK ON
BRK OFF

3-11-6. REC→READY TIMING CHART



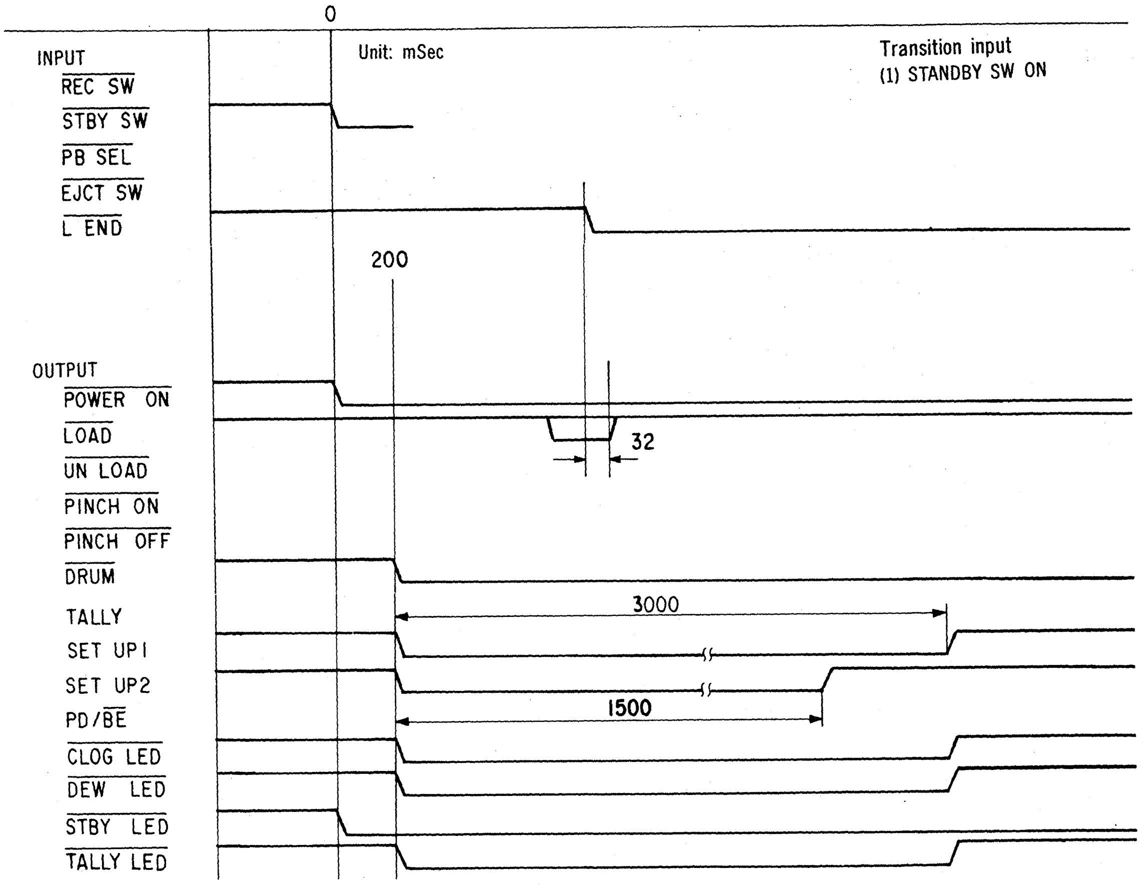
Transition input
(1) REC SW ON
(2) Abnormal detection
a) No TFG, 1 Sec
b) No DRUM PG, 200 mSec
c) T END 'L"
d) BATT DOWN 30 Sec later

3-11-7. STANDBY→READY TIMING CHART

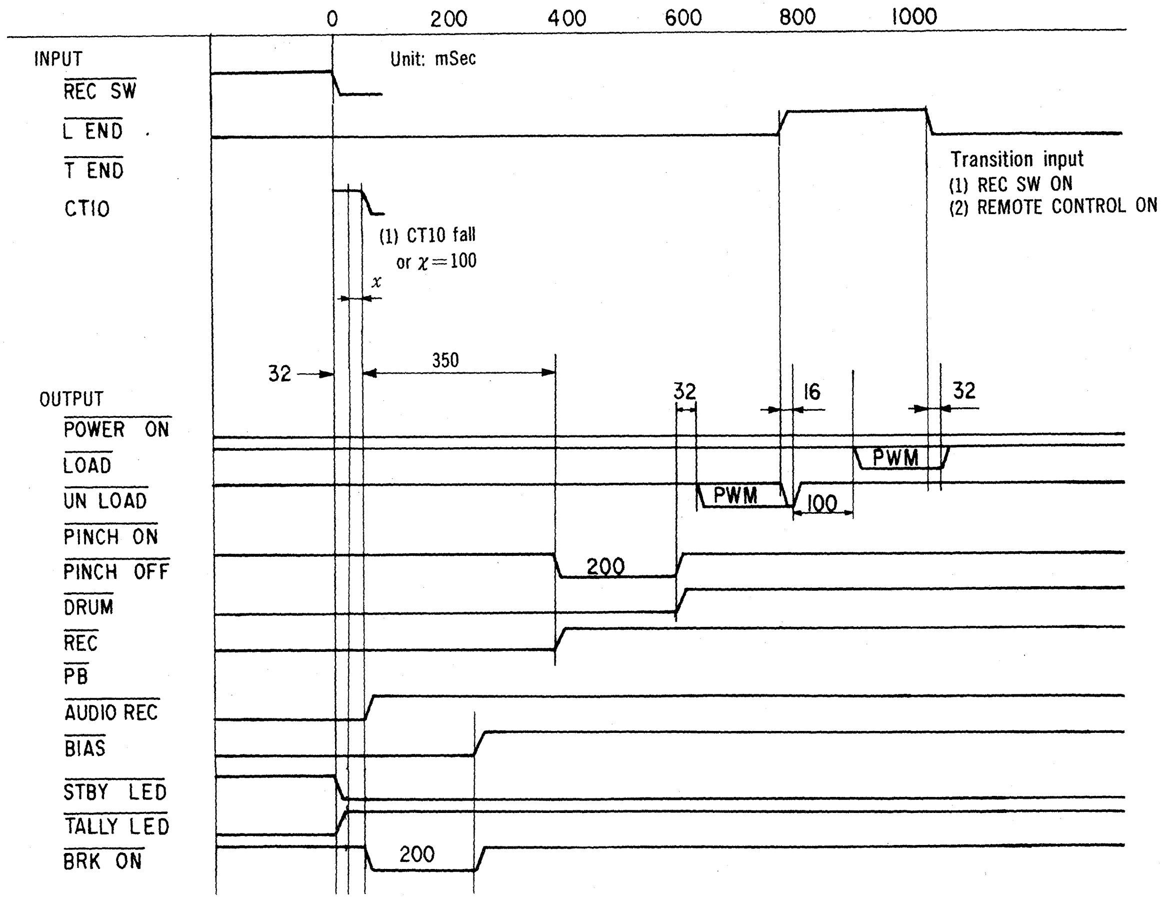


Transition input
(1) STANDBY SW ON
(2) Abnormal detection
a) No DRUM PG, 200 mSec
b) BATT DOWN, 30 Sec later

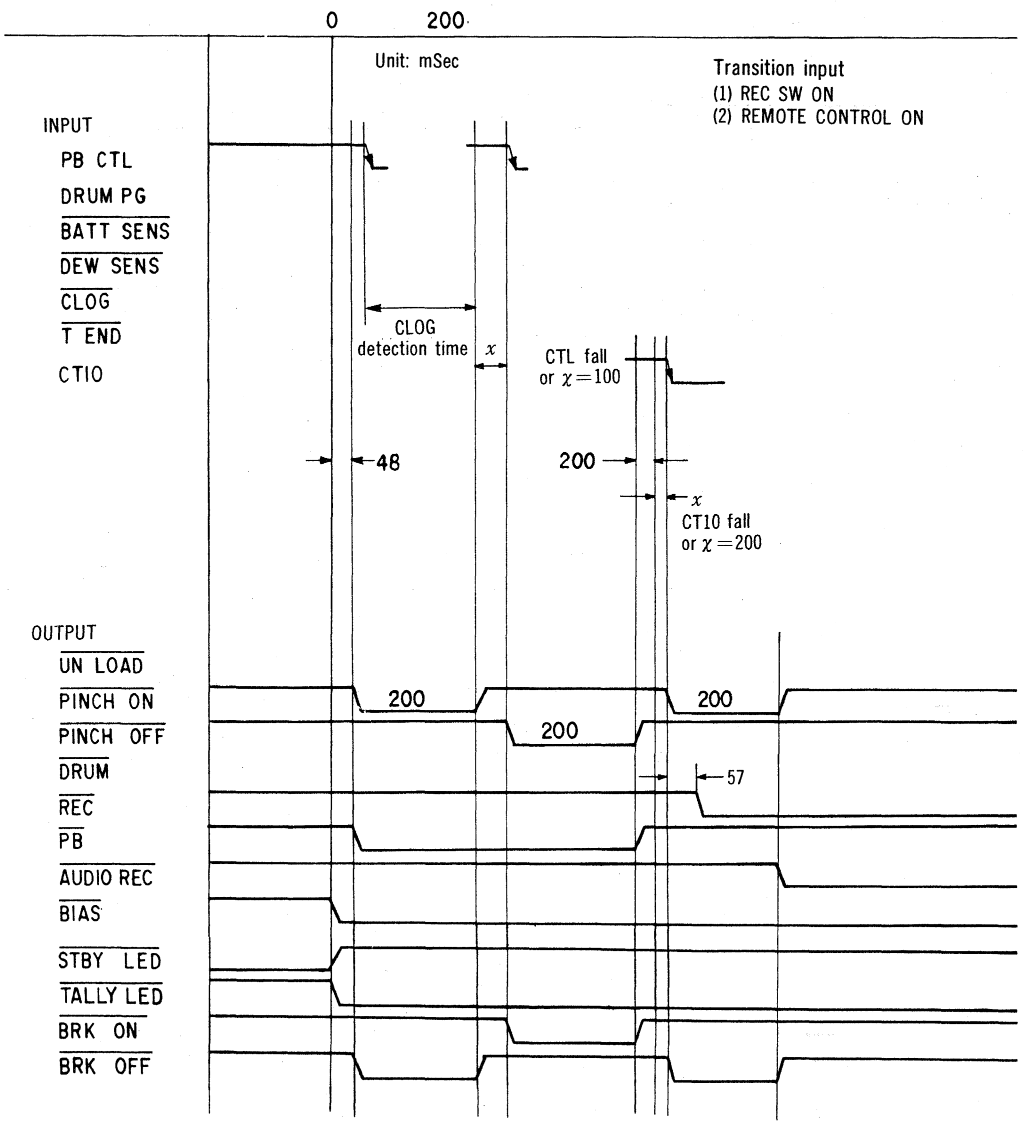
3-11-8. READY→STANDBY TIMING CHART


0
INPUT
REC SW
STBY SW
PB SEL
EJCT SW
L END
Unit: mSec
Transition input
(1) STANDBY SW ON
200
OUTPUT
POWER ON
LOAD
UN LOAD
PINCH ON
PINCH OFF
DRUM
TALLY
SET UP1
SET UP2
PD/BE
CLOG LED
DEW LED
STBY LED
TALLY LED
32
3000
1500

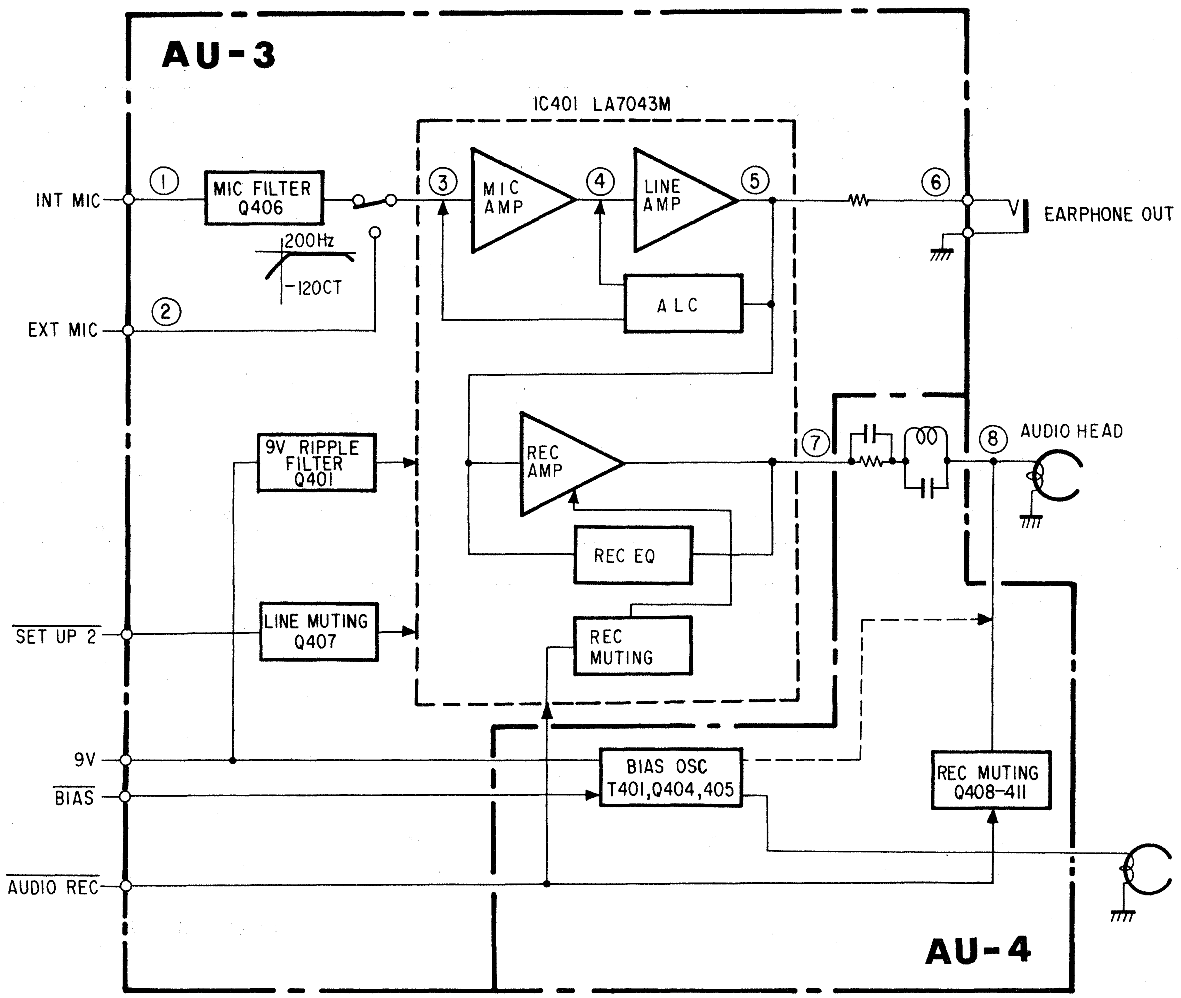
3-11-9. REC→STANDBY TIMING CHART


0
200
400
600
800
1000
INPUT
REC SW
L END
T END
CT10
Unit: mSec
Transition input
(1) REC SW ON
(2) REMOTE CONTROL ON
(1) CT10 fall
or χ=100
x
32
350
32
16
32
OUTPUT
POWER ON
LOAD
UN LOAD
PINCH ON
PINCH OFF
DRUM
REC
PB
AUDIO REC
BIAS
STBY LED
TALLY LED
BRK ON
PWM
PWM
100
200
200

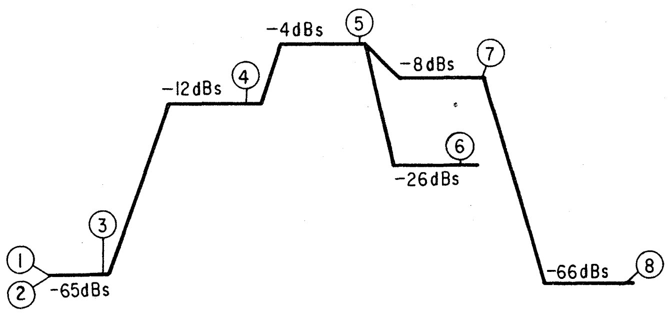
3-11-10. STANDBY→REC TIMING CHART


0
200
Unit: mSec
Transition input
(1) REC SW ON
(2) REMOTE CONTROL ON
INPUT
PB CTL
DRUM PG
BATT SENS
DEW SENS
CLOG
T END
CTIO
CLOG detection time
x
CTL fall or χ=100
48
200
x
CT10 fall or χ=200
OUTPUT
UN LOAD
PINCH ON
PINCH OFF
DRUM
REC
PB
AUDIO REC
BIAS
STBY LED
TALLY LED
BRK ON
BRK OFF
200
200
200
57

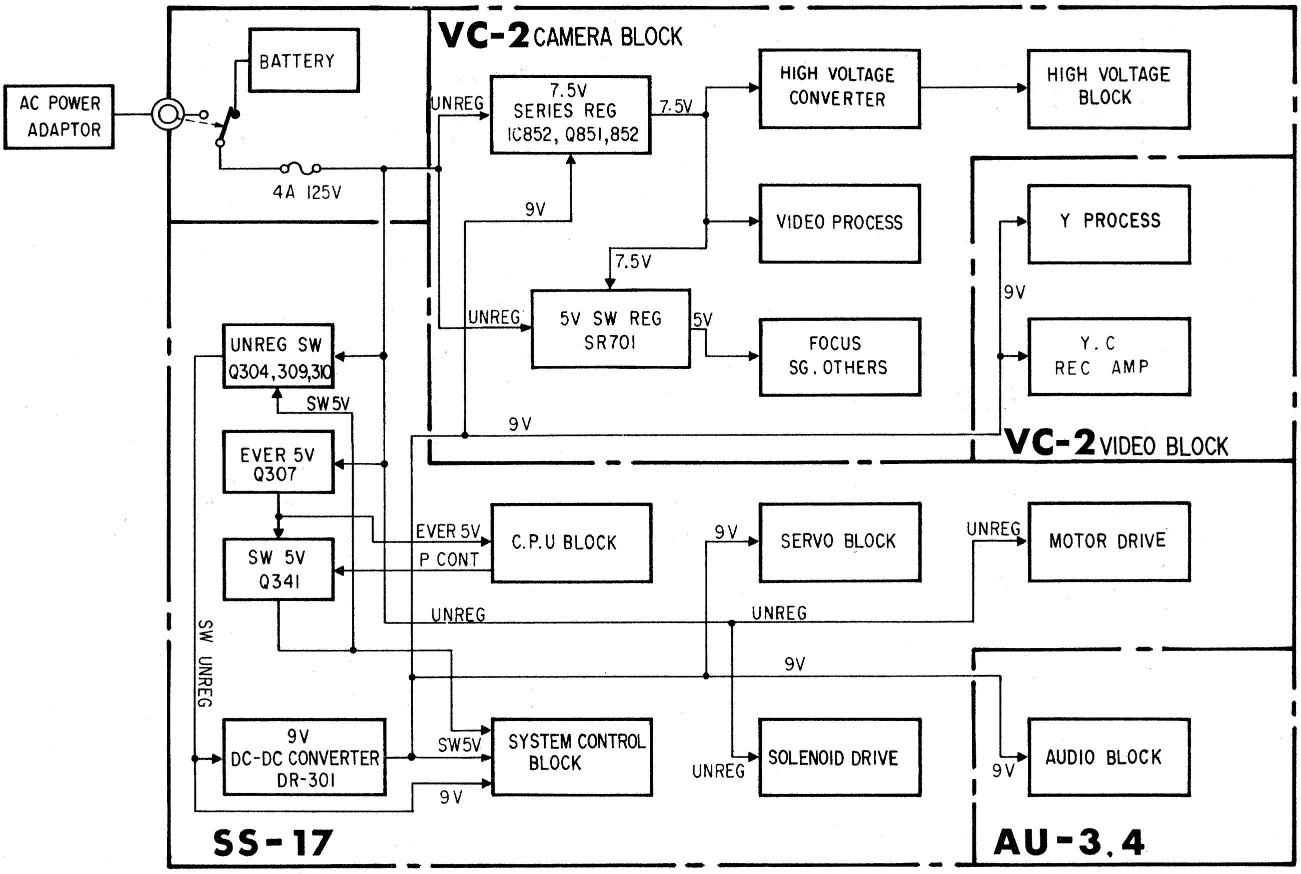
3-12. AUDIO BLOCK DIAGRAM


AU-3
IC401 LA7043M
INT MIC
①
MIC FILTER Q406
200Hz
-120CT
③
MIC AMP
④
LINE AMP
⑤
⑥
EARPHONE OUT
EXT MIC
②
A L C
⑦
⑧
AUDIO HEAD
9V RIPPLE FILTER Q401
REC AMP
REC EQ
SET UP 2
LINE MUTING Q407
REC MUTING
9V
BIAS
BIAS OSC T401,Q404,405
REC MUTING Q408-411
FULL ERASE HEAD
AUDIO REC
AU-4

3-13. AUDIO LEVEL DIAGRAM



3-14. POWER SYSTEM BLOCK DIAGRAM



VC-2 CAMERA BLOCK
AC POWER ADAPTOR
BATTERY
4A 125V
UNREG
7.5V SERIES REG IC852, Q851,852
7.5V
HIGH VOLTAGE CONVERTER
HIGH VOLTAGE BLOCK
9V
VIDEO PROCESS
Y PROCESS
7.5V
UNREG
5V SW REG SR701
5V
FOCUS SG. OTHERS
9V
Y. C REC AMP
UNREG SW Q304,309,310
SW5V
9V
VC-2 VIDEO BLOCK
EVER 5V Q307
EVER 5V
C.P.U BLOCK
9V
SERVO BLOCK
UNREG
MOTOR DRIVE
SW 5V Q341
P CONT
UNREG
UNREG
SW UNREG
9V
9V DC-DC CONVERTER DR-301
SW5V
SYSTEM CONTROL BLOCK
UNREG
SOLENOID DRIVE
9V
AUDIO BLOCK
9V
SS-17
AU-3.4

3-15. FUNCTION OF IC301 TERMINALS

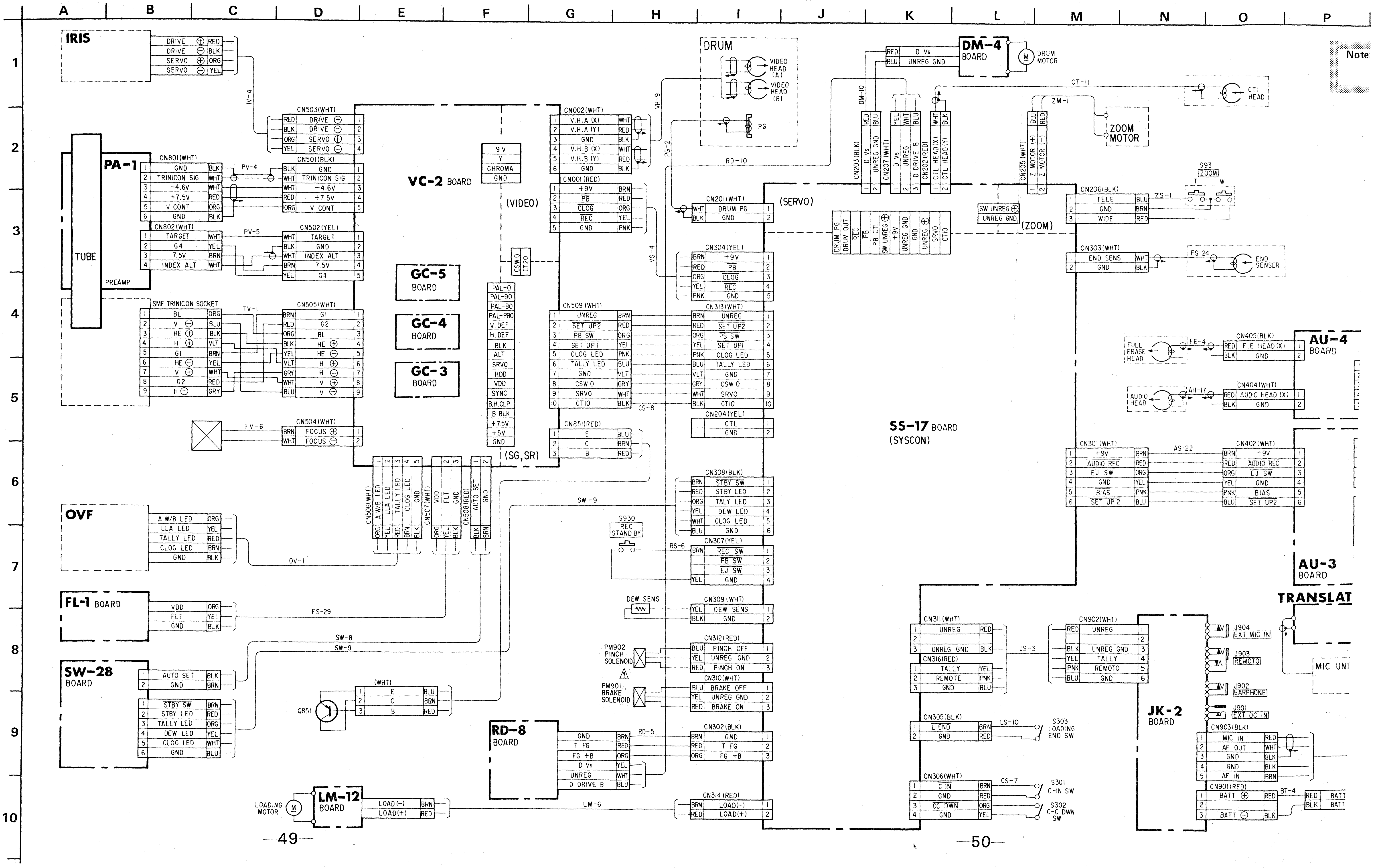
Terminal No.	Terminal name	I/O	Functions
1	PWCTRL	OUT	Turns on/off power supply circuit.
2	BIAS	OUT	Turns on/off audio recording bias circuit.
3	PINCH ON	OUT	Presses pinch roller against capstan. Pulse width of 200mS.
4	PINCH OFF	OUT	Separates pinch roller from capstan. Pulse width of 200mS.
5	BRAKE ON	OUT	Applies brake to reel base. Pulse width of 200mS.
6	BRAKE OFF	OUT	Releases brake from reel base. Pulse width of 200mS.
7	DEW LED	OUT	Turns on DEW LED.
8	STAND-BY LED	OUT	Turns on STANDBY LED.
9	TALLY LED	OUT	Turns on TALLY LED.
10	CLOG LED	OUT	Turns on CAUTION LED.
11			Not used.
12	PB	OUT	Operates PB amplifier for CLOG detection and for linked shooting.
13	REC	OUT	Operates CTR recording amplifier of picture recording circuit.
14	DRUM OUT	OUT	Turns on/off drum motor drive circuit.
15	SET UP 2	OUT	Performs beam blacking of camera tube for 1.5 second during shifting from READY to REC, STANDBY and PB.
16	START	IN	Trigger input for starting IC301. Inputs occur when each switch of REC and STANDBY EJECT C-IN is turned on and when PB SW becomes "L".
17			Not used.
18	+5V (VDD)		+5V power supply terminal.
19			Not used
20	DEW SENS	IN	Drum dew condensation input. Set is not operated during "L".
21	BAT DWN	IN	When power supply voltage decreases, "L" occurs and the operation of set is stopped.
22	RECSW/REMOTE	IN	Input of REC switch and remote control switch. When this input occurs, REC mode starts. Also, STANDBY and REC modes are switched every time there is an input.
23	STAND-BY SW	IN	Input of STANDBY switch. By this input, STANDBY and READY (stop) modes are switched.
24	DRUM PG	IN	PG signal input by which whether the drum is normally rotated or not is checked.
25	CLOG DET	IN	Whether the normal picture recording is being made or not is applied to this terminal. Whether the picture recording is normal or not is checked during linked shooting.
26	TFG	IN	FG of reel base rotation at T side is entered. If FG input is abnormal, set is stopped.
27	TAPE END	IN	If the oscillation of TAPE END detection-oscillation circuit stops, then "L" is applied to this terminal and the set is stopped.
28	PB SW	IN	If this terminal is set to "L", then the set will have PB mode.
29	AUDIO REC	OUT	Operates audio sound recording circuit.
30			Not used.
31	SET UP 1	OUT	Pulses of 3 seconds are delivered when shifting from READY to REC, STANDBY and PB, during which the set performs no operation. This output also turns on LEDs of WHITE BALANCE and LOW LIGHT. 3 seconds is mainly used for the rise of heater of picture tube.
32	EJECT SW	IN	Cassette is ejected by this input.
33	C-IN SW	IN	Input terminal of switch which detects the entry of a cassette. This switch also detects the claw for preventing picture recording of cassette and thus has the function to prevent picture recording.
34	L END	IN	Input terminal for detecting the completion of loading.
35	CSWO	IN	Input for distinguishing the output of A-head from the output of B-head during CLOG detection.
36	X'tal IN	IN	Terminal for connecting clock oscillation element.
37	X'tal OUT	OUT	Terminal for connecting clock oscillation element.
38	RESET	IN	Trigger input of IC031 reset circuit.
39	PBCTL	IN	Input for taking pinch-off timing during linked shooting.
40	CTIO	IN	Input for taking REC start timing during linked shooting.
41			Not used.
42	GND		Earth terminal
43			Not used.
44	BE/PD	OUT	Delivers "L" when the battery voltage is lower than 9.15 ± 0.1V.
45	CC DOWN SW	IN	Detects a failure of cassette control.
46			Not used.
47	LOAD	OUT	Output for performing the loading (pulse drive).
48	UN LOAD	OUT	Output for performing unloading (pulse drive).

3-16. FUNCTION OF IC851 TERMINALS

Terminal No.	Terminal name	I/O	Functions
1	TST1	IN	Input for measurement, normally fixed to 'H'.
2	TST2	IN	Input for measurement, normally fixed to 'H'.
3			Not used.
4	TST3	IN	Input for measurement, normally fixed to 'H'.
5	PPM0	OUT	PAL carrier color signal, fsc = $(44 \pm 1/8) \cdot f_H$
6	Vss		0V
7	PM90	OUT	PAL carrier color signal, -90° signal for PPM0.
8	XRST	IN	External reset input, normally fixed to 'H'.
9	PBO	OUT	Burst signal of PAL.
10	PPBO	OUT	Pilot burst signal of PAL.
11	FID	OUT	Frame ID signal of SECAM.
12	VID	OUT	Field ID signal of SECAM.
13	PPBF	OUT	Pilot burst flag signal of PAL.
14	DEVD	OUT	Deflection VD signal.
15	DEHD	OUT	Deflection HD signal.
16	BMCL	OUT	Black mask clamp signal.
17	BBLK	OUT	Beam blanking signal.
18	VDO	OUT	Vertical drive signal.
19	V_{DD}		+5V
20	HDO	OUT	Horizontal drive signal.
21	SYNC	OUT	Composite sync signal.
22	BLKO	OUT	Composite blanking signal of PAL.
23	BFO	OUT	Color burst flag signal of PAL.
24			Not used.
25	PALT	OUT	Line alternation signal of PAL.
26	XPAL	OUT	Inverted signal of PALT.
27	SALT	OUT	Line alternation signal of SECAM.
28	SCBL	OUT	Color blanking signal of SECAM.
29	SHBL	OUT	Horizontal blanking signal of SECAM.
30	CSWO	OUT	Video head switching signal for CLOG detection.
31	Vss		0V
32	CT10	OUT	CTL recording signal.
33	CT20	OUT	Video head switching signal for recording.
34	SRVO	OUT	Servo signal.
35	FLM2	OUT	Frame alternation signal.
36	KVID	IN	Controls whether the field ID portion of SCBL is to be sent out or not.
37	X1I	IN	$702 \cdot f_H$ in
38	X1O	OUT	$702 \cdot f_H$ out
39	X2O	OUT	$706 \cdot f_H$ out
40	X2PD	OUT	Phase detector output signal.
41	X2I	IN	$706 \cdot f_H$ in
42			Not used.
43	V_{DD}		+5V
44			Not used.
45			Not used.
46			Not used.
47			Not used.
48			Not used.

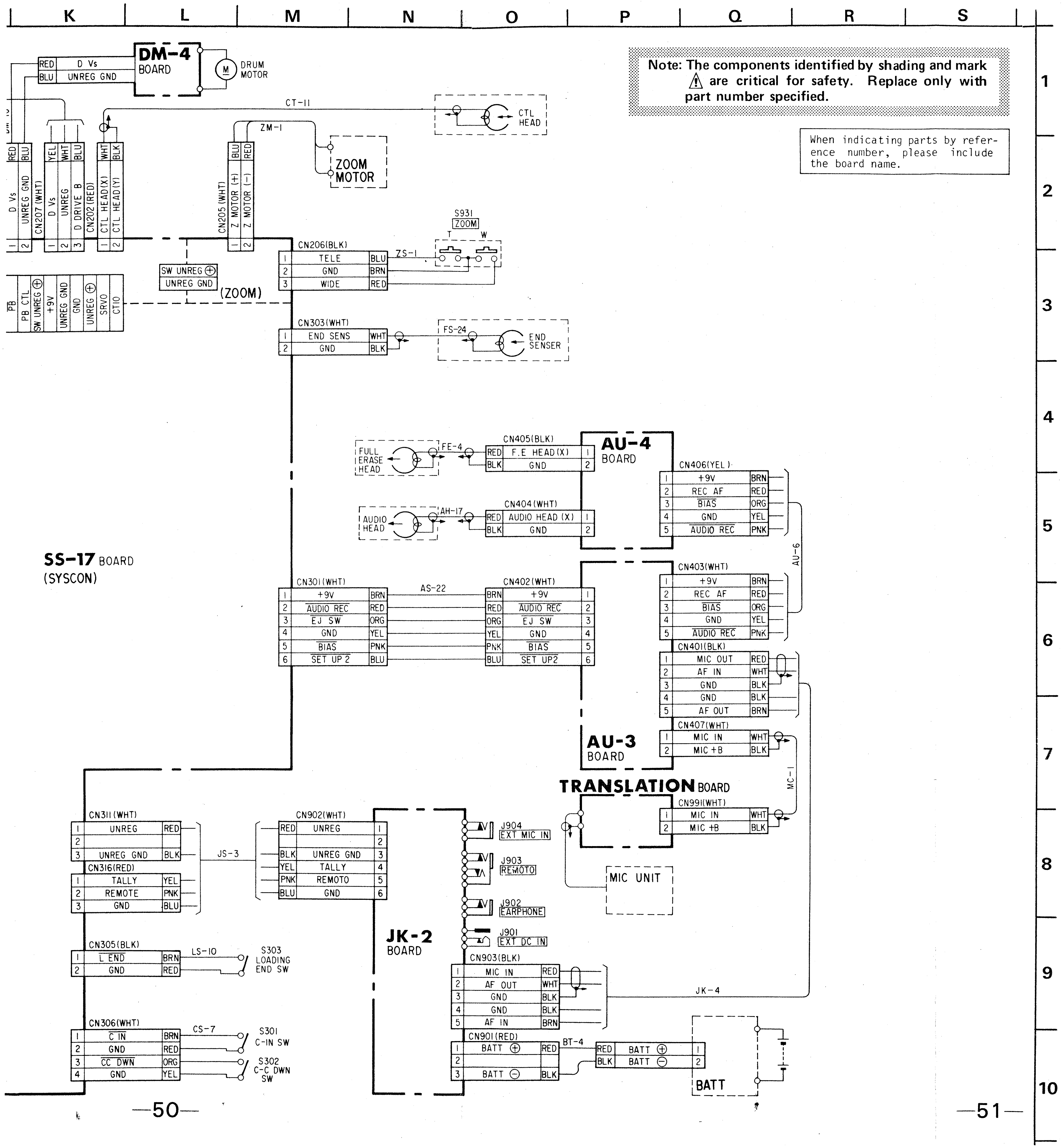
SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

4-1. FRAME SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
2
3
4
5
6
7
8
9
10
IRIS
DRIVE ⊕
DRIVE ⊖
SERVO ⊕
SERVO ⊖
IV-4
PA-1
TUBE
PREAMP
CN801(WHT)
TRINICON SIG
-4.6V
+7.5V
V CONT
GND
CN802(WHT)
TARGET
G4
7.5V
INDEX ALT
PV-4
PV-5
SMF TRINICON SOCKET
TV-1
FV-6
CN503(WHT)
CN501(BLK)
CN502(YEL)
CN505(WHT)
CN504(WHT)
FOCUS ⊕
FOCUS ⊖
VC-2 BOARD
9V
Y
CHROMA
(VIDEO)
CSW0
CT20
GC-5 BOARD
GC-4 BOARD
GC-3 BOARD
PAL-0
PAL-90
PAL-B0
PAL-PB0
V.DEF
H.DEF
BLK
ALT
SRVO
HDD
VDD
SYNC
B.H.CLP
B.BLK
+7.5V
+5V
(SG,SR)
CN506(WHT)
A W/B LED
LLA LED
TALLY LED
CLOG LED
CN507(WHT)
FLT
CN508(RED)
AUTO SET
CN002(WHT)
V.H.A (X)
V.H.A (Y)
V.H.B (X)
V.H.B (Y)
CN001(RED)
+9V
PB
CLOG
REC
CN509 (WHT)
UNREG
SET UP2
PB SW
SET UP1
CLOG LED
TALLY LED
CSW 0
SRVO
CT10
CN851(RED)
E
C
B
VH-9
PG-2
VS-4
CS-8
SW-9
DRUM
VIDEO HEAD (A)
VIDEO HEAD (B)
PG
RD-10
CN201(WHT)
DRUM PG
(SERVO)
CN304(YEL)
CN313(WHT)
CN204(YEL)
CTL
CN308(BLK)
STBY SW
STBY LED
TALY LED
DEW LED
CLOG LED
CN307(YEL)
REC SW
PB SW
EJ SW
S930 REC STAND BY
RS-6
DEW SENS
CN309 (WHT)
PM902 PINCH SOLENOID
CN312(RED)
PINCH OFF
UNREG GND
PINCH ON
PM901 BRAKE SOLENOID
CN310(WHT)
BRAKE OFF
BRAKE ON
RD-8 BOARD
T FG
FG +B
D Vs
D DRIVE B
RD-5
CN302(BLK)
CN314 (RED)
LOAD(-)
LOAD(+)
LM-6
LM-12 BOARD
LOADING MOTOR
Q851
(WHT)
OVF
OV-1
FL-1 BOARD
FS-29
SW-28 BOARD
SW-8
STBY SW
DEW LED
DM-4 BOARD
DRUM MOTOR
UNREG GND
DM-10
CT-11
CTL HEAD
ZM-1
ZOOM MOTOR
CN203(BLK)
CN207(WHT)
D DRIVE B
CN202(RED)
CTL HEAD(X)
CTL HEAD(Y)
CN205(WHT)
Z MOTOR (+)
Z MOTOR (-)
DRUM PG
DRUM OUT
PB CTL
SW UNREG ⊕
SRVO
SW UNREG ⊕
UNREG GND
(ZOOM)
S931 ZOOM
T
W
ZS-1
CN206(BLK)
TELE
WIDE
CN303(WHT)
END SENS
FS-24
END SENSER
SS-17 BOARD
(SYSCON)
FULL ERASE HEAD
FE-4
CN405(BLK)
F.E HEAD (X)
AU-4 BOARD
AUDIO HEAD
AH-17
CN404(WHT)
AUDIO HEAD (X)
CN301(WHT)
AUDIO REC
BIAS
SET UP 2
AS-22
CN402(WHT)
AU-3 BOARD
TRANSLAT
CN311(WHT)
CN316(RED)
TALLY
REMOTE
JS-3
CN902(WHT)
REMOTO
JK-2 BOARD
J904 EXT MIC IN
J903 REMOTO
J902 EARPHONE
J901 EXT DC IN
MIC UNI
CN903(BLK)
MIC IN
AF OUT
AF IN
CN305(BLK)
L END
LS-10
S303 LOADING END SW
CN306(WHT)
C IN
CC DWN
CS-7
S301 C-IN SW
S302 C-C DWN SW
CN901(RED)
BATT ⊕
BATT ⊖
BT-4
BATT
Note:

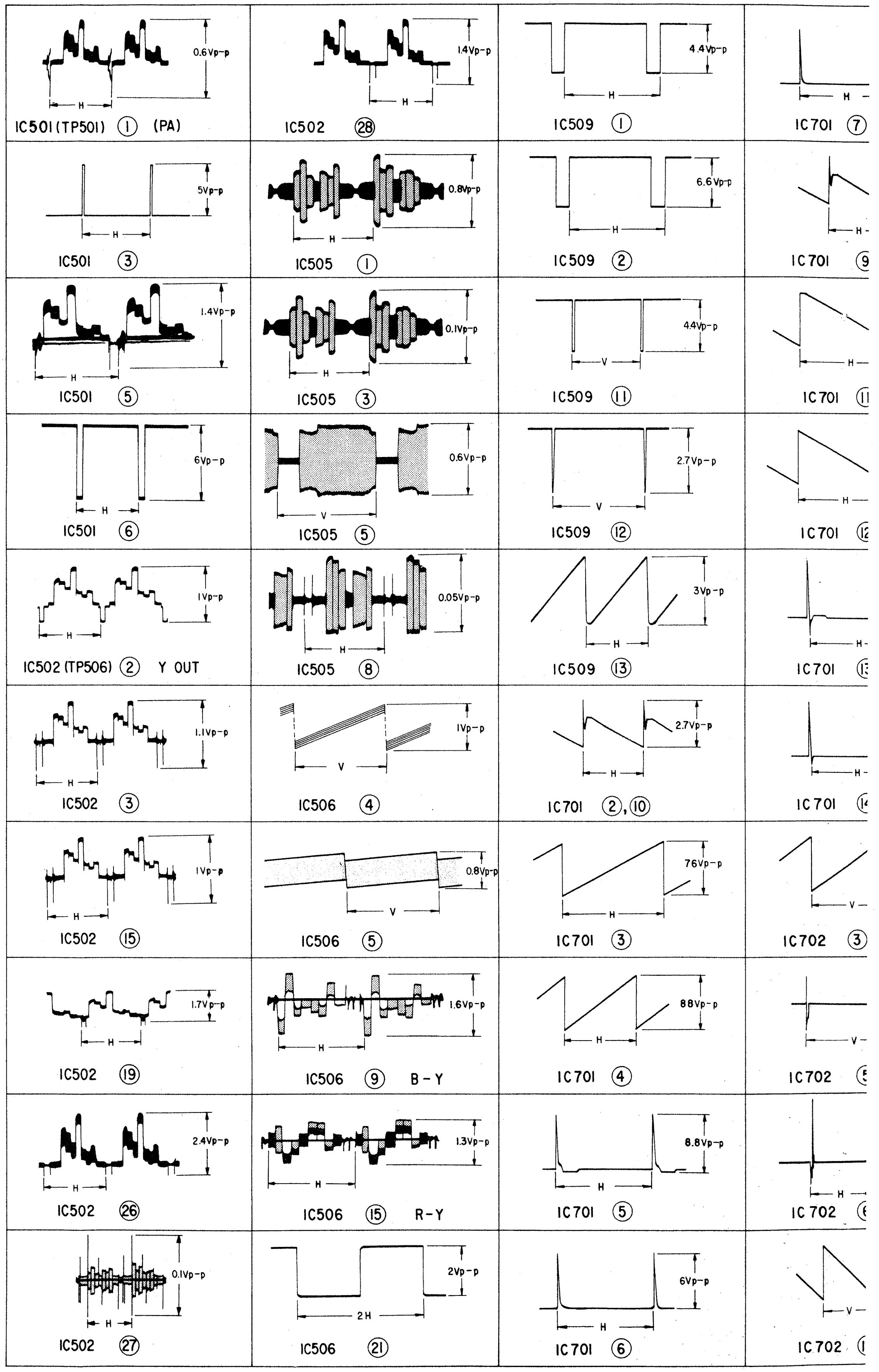
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.


K L M N O P Q R S
1 2 3 4 5 6 7 8 9 10
DM-4 BOARD
DRUM MOTOR
D Vs
UNREG GND
CT-11
CTL HEAD
ZM-1
ZOOM MOTOR
CN207(WHT)
CN202(RED)
CN205(WHT)
Z MOTOR (+)
Z MOTOR (−)
S931 ZOOM
T W
CN206(BLK)
TELE
GND
WIDE
ZS-1
SW UNREG ⊕
UNREG GND
(ZOOM)
CN303(WHT)
END SENS
GND
FS-24
END SENSER
FULL ERASE HEAD
FE-4
CN405(BLK)
F.E HEAD (X)
AU-4 BOARD
CN406(YEL)
AUDIO HEAD
AH-17
CN404(WHT)
AUDIO HEAD (X)
AU-6
SS-17 BOARD (SYSCON)
CN301(WHT)
AS-22
CN402(WHT)
+9V
AUDIO REC
EJ SW
BIAS
SET UP 2
CN403(WHT)
REC AF
CN401(BLK)
MIC OUT
AF IN
AF OUT
AU-3 BOARD
CN407(WHT)
MIC IN
MIC +B
TRANSLATION BOARD
CN991(WHT)
MC-1
MIC UNIT
CN311(WHT)
UNREG
CN316(RED)
TALLY
REMOTE
JS-3
CN902(WHT)
J904 EXT MIC IN
J903 REMOTO
J902 EARPHONE
J901 EXT DC IN
JK-2 BOARD
CN903(BLK)
JK-4
CN305(BLK)
L END
LS-10
S303 LOADING END SW
CN901(RED)
BATT ⊕
BATT ⊖
BT-4
BATT
CN306(WHT)
C IN
CC DWN
CS-7
S301 C-IN SW
S302 C-C DWN SW

WAVEFORMS

VC-2 BOARD (CAMERA) H: approx. 18.75kHz



S

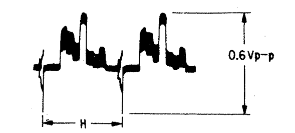
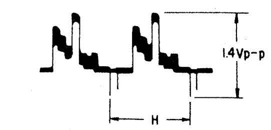
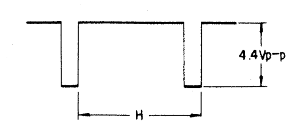
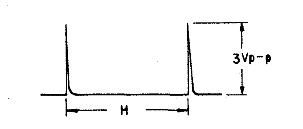
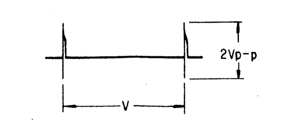
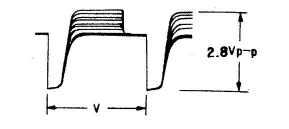
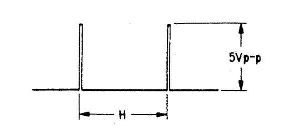
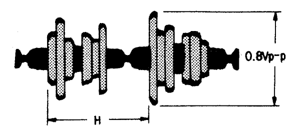
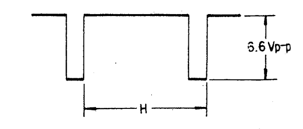
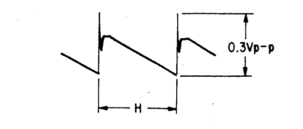
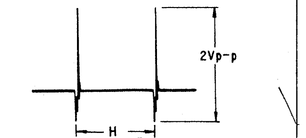
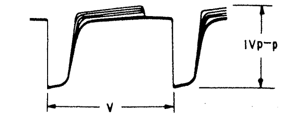
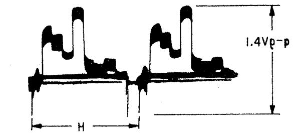
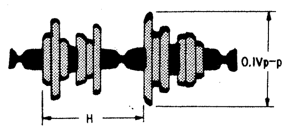
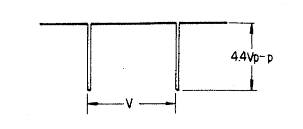
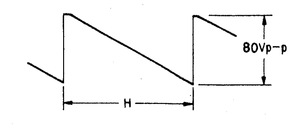
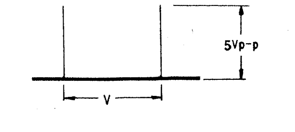
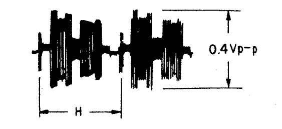
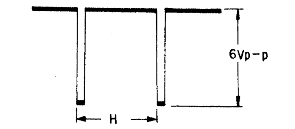
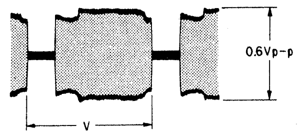
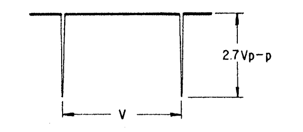
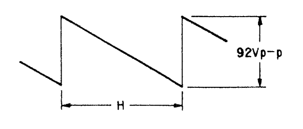
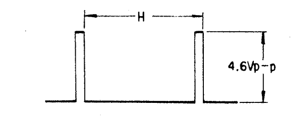
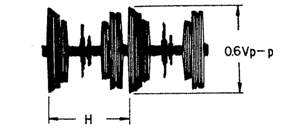
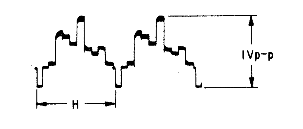
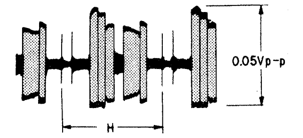
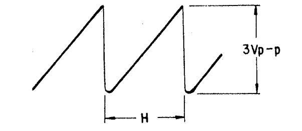
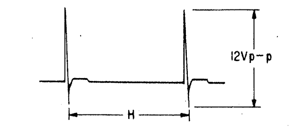
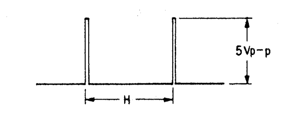
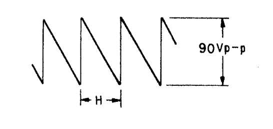
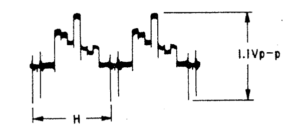
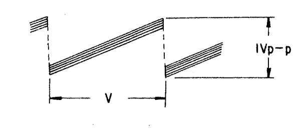
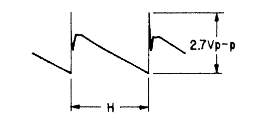
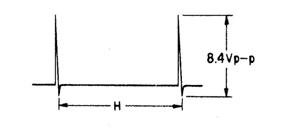
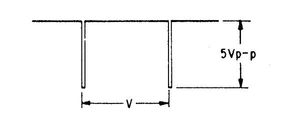
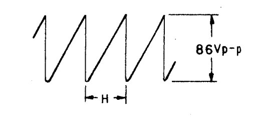
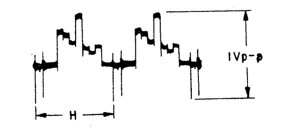
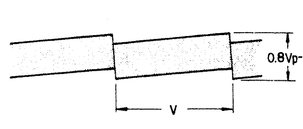
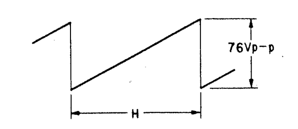
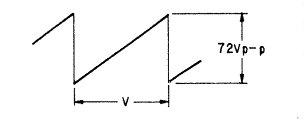
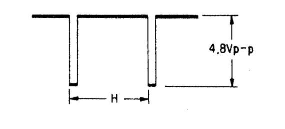
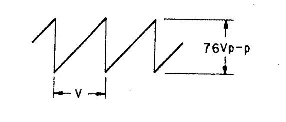
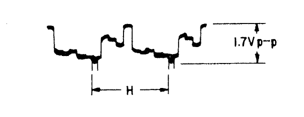
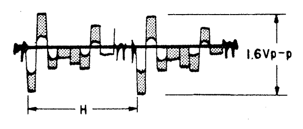
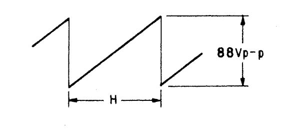
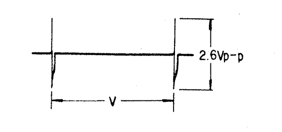
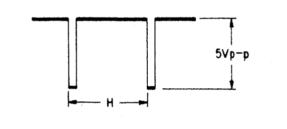
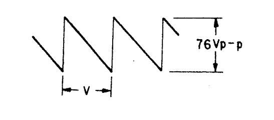
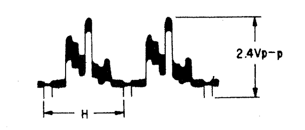
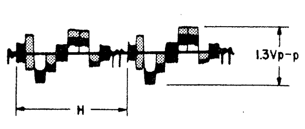
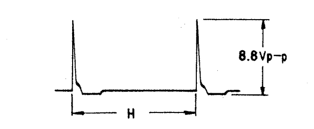
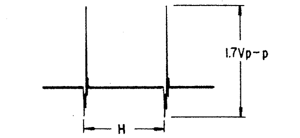
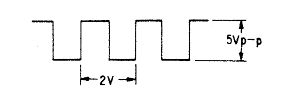
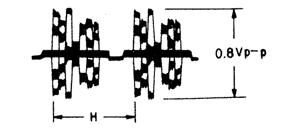
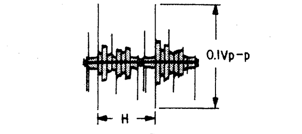
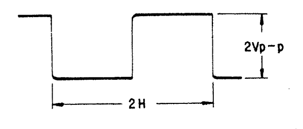
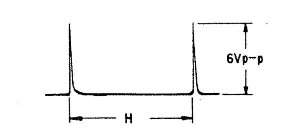
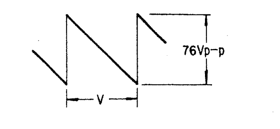
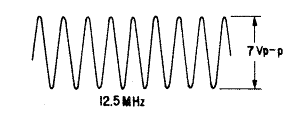
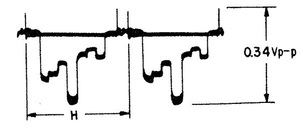
mark
with

refer-
nclude

1
2
3
4
5
6
7
8
9
10

WAVEFORMS

VC-2 BOARD (CAMERA) H: approx. 18.75kHz

 IC501(TP501) ① (PA)	 IC502 ㉘	 IC509 ①	 IC701 ⑦,⑮	 IC702 ⑬	 TP503 (W.AGC)
 IC501 ③	 IC505 ①	 IC509 ②	 IC701 ⑨	 IC702 ⑭	 TP504 (W.IRIS)
 IC501 ⑤	 IC505 ③	 IC509 ⑪	 IC701 ⑪	 IC851 ⑭ V.DEF	 TP514 CHROMA OUT
 IC501 ⑥	 IC505 ⑤	 IC509 ⑫	 IC701 ⑫	 IC851 ⑮ H.DEF	 TP522
 IC502 (TP506) ② Y OUT	 IC505 ⑧	 IC509 ⑬	 IC701 ⑬	 IC851 ⑯,⑰	 TP702 H(−)
 IC502 ③	 IC506 ④	 IC701 ②,⑩	 IC701 ⑭	 IC851 ⑱	 TP703 H(+)
 IC502 ⑮	 IC506 ⑤	 IC701 ③	 IC702 ③,④	 IC851 ⑳ HD	 TP704 V(+)
 IC502 ⑲	 IC506 ⑨ B-Y	 IC701 ④	 IC702 ⑤	 IC851 ㉑ SYNC	 TP705 V(−)
 IC502 ㉖	 IC506 ⑮ R-Y	 IC701 ⑤	 IC 702 ⑥	 IC851 ㉜	 GC-4BOARD ⑭ PIN
 IC502 ㉗	 IC506 ㉑	 IC701 ⑥	 IC702 ⑫	 IC851 ㊲	 GC-5 BOARD ⑬ PIN

4-2. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

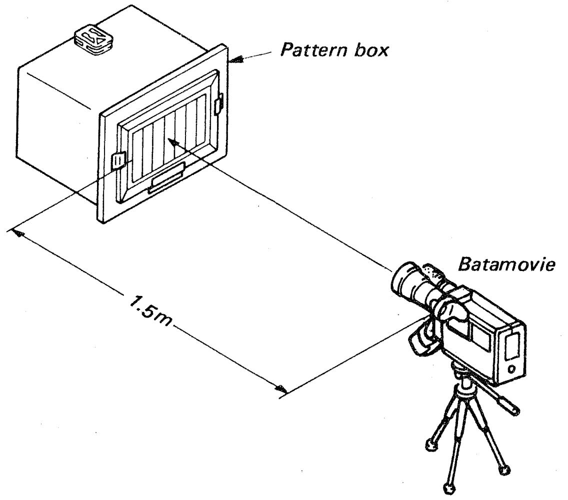
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Note:

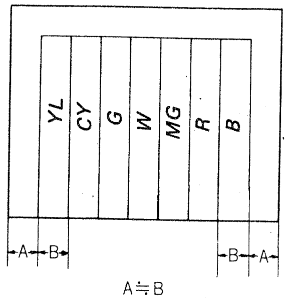
- Caution when replacing tip parts.
  New parts must be attached after removal of tip
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ : 1000 Ω, MΩ : 1000 kΩ
- All capacitors are in μF unless otherwise noted. pF : μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ⊗ : Through hole.
- ─▭─ : nonflammable resistor.
- ━━━ : B+ bus.
- ▭ : adjustment for repair.
- Voltage and waveform measuring conditions:
  - (1) Sample object: Pattern box color bars.
  - (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm more).

1. **Connection**



Pattern box
Batamovie
1.5m

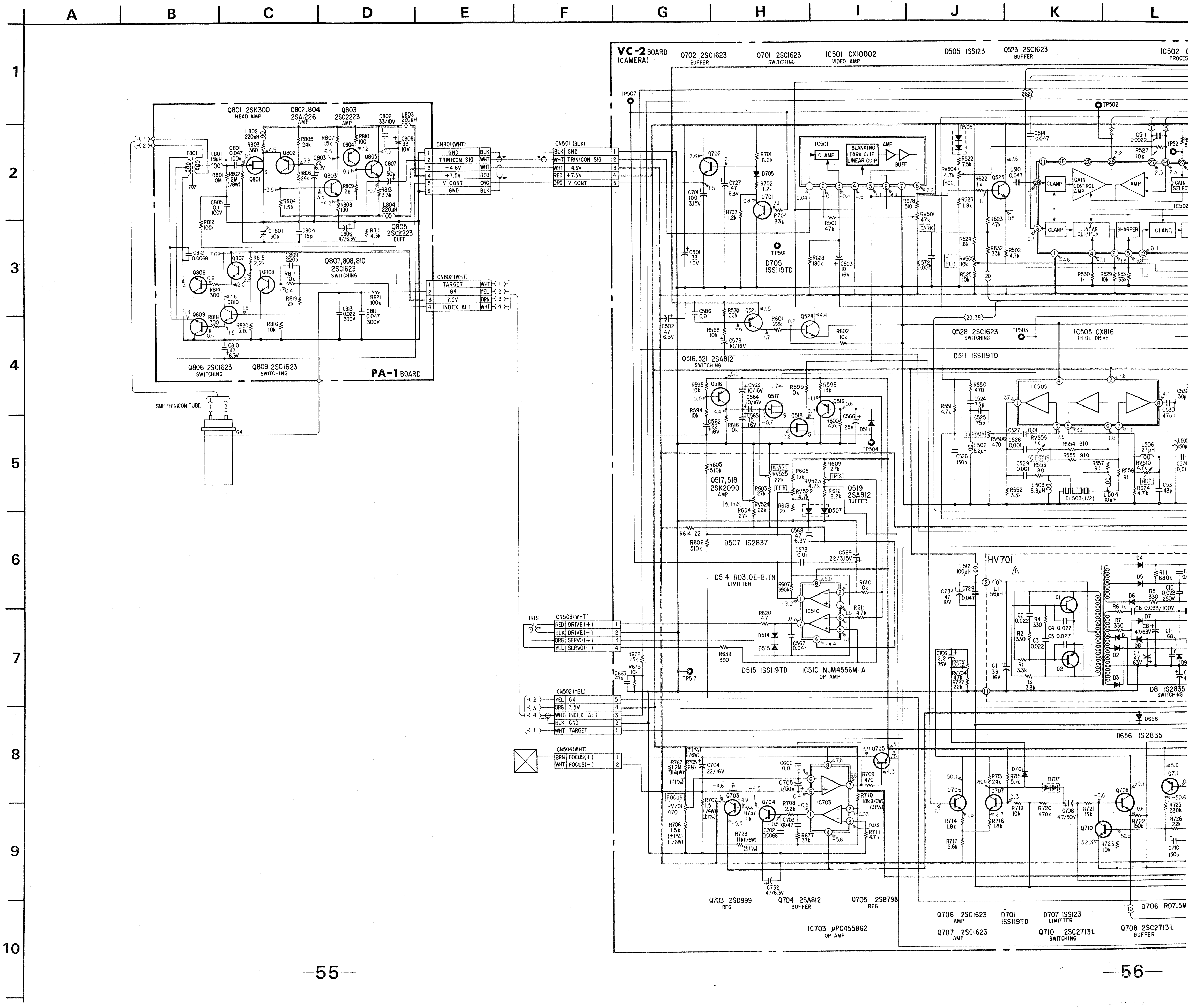
2. **Shoot the subject so that the picture frame on the monitor is as shown in the figure below.**



YL
CY
G
W
MG
R
B
A
B
B
A
A≒B

PA-1 (PRE AMP), VC-2 (Y & CHROMA SIGNAL PROCESS), GC-3 (OSCILLATOR), GC-4 (MODULATER), GC-5 (DELAY), FL-1 (FILTER SWITCH) SCHEMATIC DIAGRAM

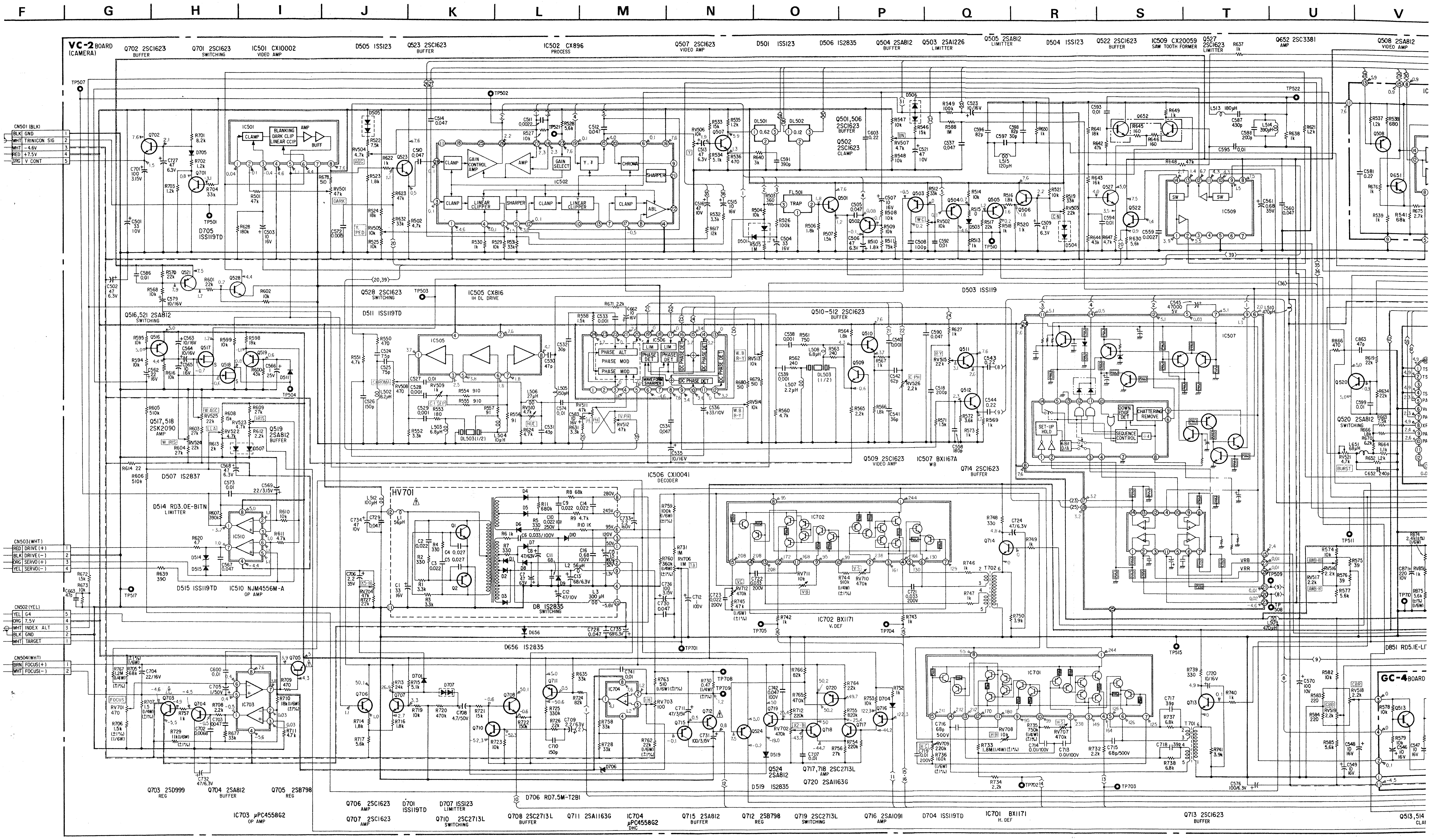
– Ref. No. PA-1 BOARD : 2,000 series, VC-2 BOARD, GC-3 BOARD, GC-4 BOARD, GC-5 BOARD : 1,000 series, FL-1 BOARD : 4,500 series –

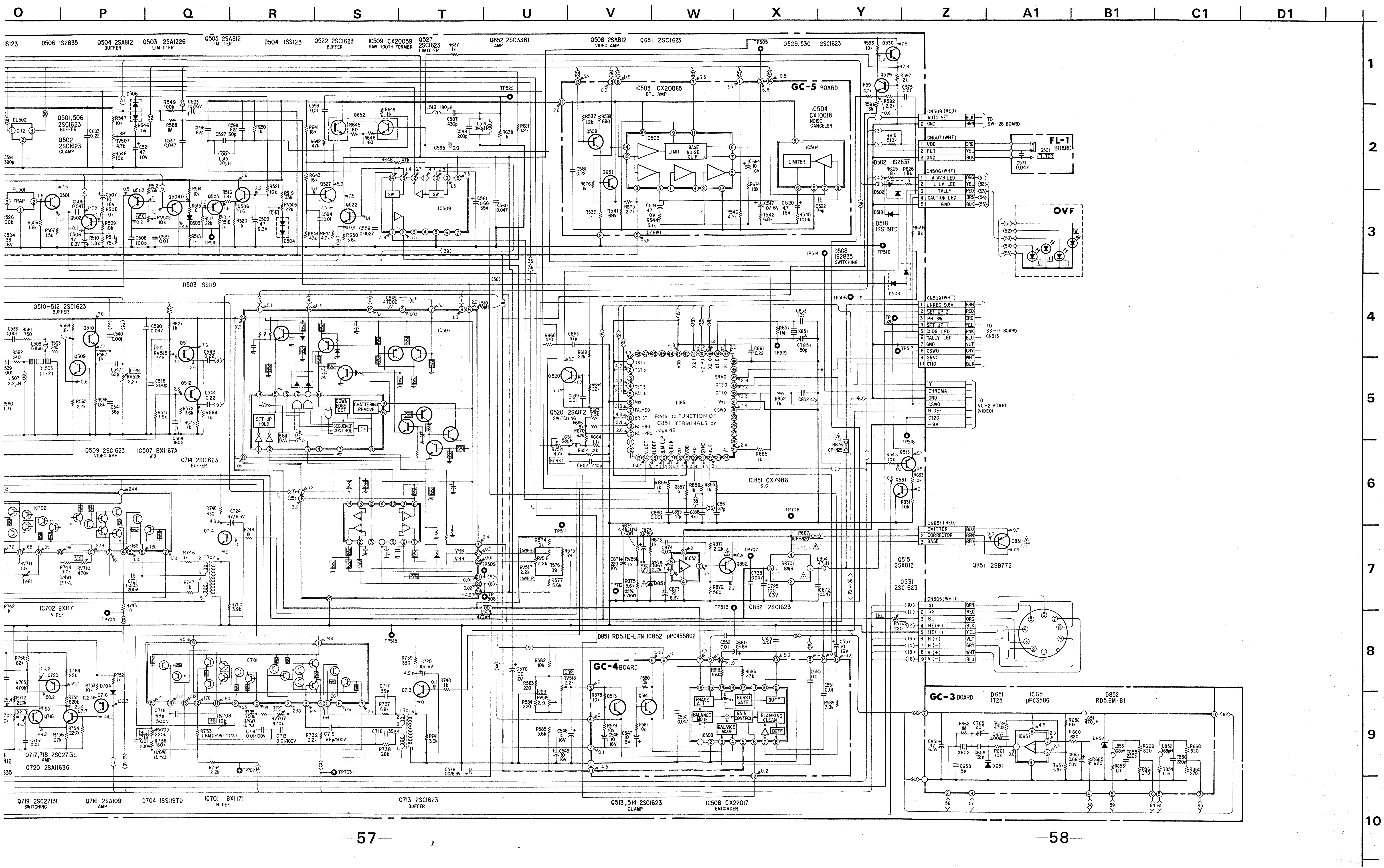


A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
5
6
7
8
9
10
PA-1 BOARD
Q801 2SK300 HEAD AMP
Q802,804 2SA1226 AMP
Q803 2SC2223 AMP
Q805 2SC2223 BUFF
Q807,808,810 2SC1623 SWITCHING
Q806 2SC1623 SWITCHING
Q809 2SC1623 SWITCHING
T801
CN801(WHT)
GND
TRINICON SIG
-4.6V
+7.5V
V CONT
CN802(WHT)
TARGET
G4
7.5V
INDEX ALT
SMF TRINICON TUBE
CN501 (BLK)
VC-2 BOARD (CAMERA)
Q702 2SC1623 BUFFER
Q701 2SC1623 SWITCHING
IC501 CX10002 VIDEO AMP
D505 1SS123
Q523 2SC1623 BUFFER
IC502
TP507
TP502
TP501
TP503
TP504
TP517
BLANKING DARK CLIP LINEAR CCIP
CLAMP
BUFF
GAIN CONTROL AMP
LINEAR CLIPPER
SHARPER
D705 1SS119TD
Q516,521 2SA812 SWITCHING
Q528 2SC1623 SWITCHING
D511 1SS119TD
IC505 CX816 1H DL DRIVE
Q517,518 2SK2090 AMP
Q519 2SA812 BUFFER
D507 1S2837
D514 RD3.0E-B1TN LIMITTER
D515 1SS119TD
IC510 NJM4556M-A OP AMP
HV701
D8 1S2835 SWITCHING
D656 1S2835
IRIS
CN503(WHT)
DRIVE(+)
DRIVE(−)
SERVO(+)
SERVO(−)
CN502(YEL)
G4
7.5V
INDEX ALT
GND
TARGET
CN504(WHT)
FOCUS(+)
FOCUS(−)
IC703
Q703 2SD999 REG
Q704 2SA812 BUFFER
Q705 2SB798 REG
IC703 μPC4558G2 OP AMP
Q706 2SC1623 AMP
Q707 2SC1623 AMP
D701 1SS119TD
D707 1SS123 LIMITTER
Q710 2SC2713L SWITCHING
Q708 2SC2713L BUFFER
D706 RD7.5M

, GC-4 (MODULATER), GC-5 (DELAY), FL-1 (FILTER SWITCH) SCHEMATIC DIAGRAM

,000 series, FL-1 BOARD : 4,500 series –

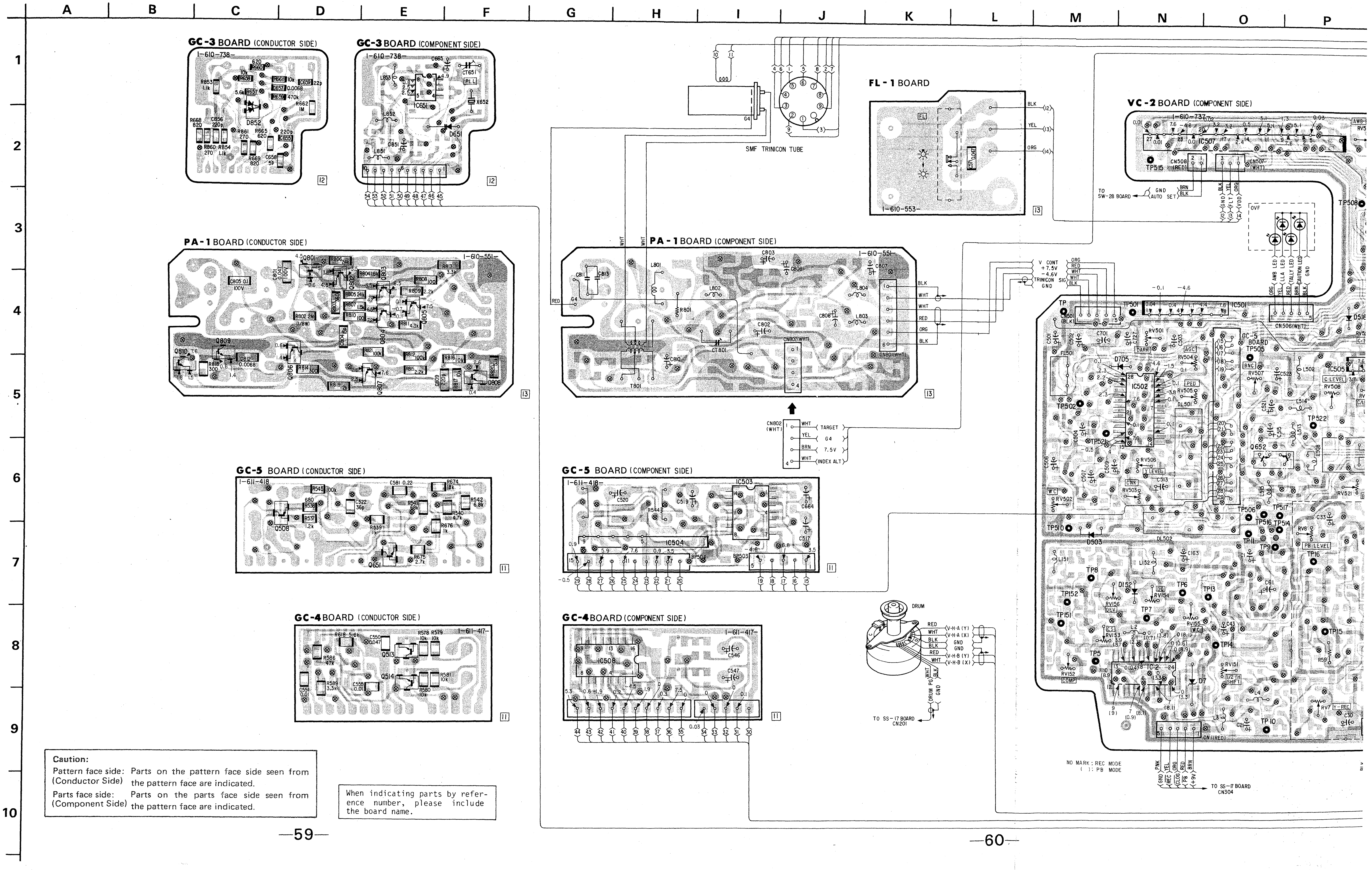

F G H I J K L M N O P Q R S T U V
VC-2 BOARD (CAMERA)
Q702 2SC1623 BUFFER
Q701 2SC1623 SWITCHING
IC501 CX10002 VIDEO AMP
D505 1SS123
Q523 2SC1623 BUFFER
IC502 CX896 PROCESS
Q507 2SC1623 VIDEO AMP
D501 1SS123
D506 1S2835
Q504 2SA812 BUFFER
Q503 2SA1226 LIMITTER
Q505 2SA812 LIMITTER
D504 1SS123
Q522 2SC1623 BUFFER
IC509 CX20059 SAW TOOTH FORMER
Q527 2SC1623 LIMITTER
Q652 2SC3381 AMP
Q508 2SA812 VIDEO AMP
CN501 (BLK)
CN503 (WHT)
CN502 (YEL)
CN504 (WHT)
Q528 2SC1623 SWITCHING
IC505 CX816 1H DL DRIVE
D511 1SS119TD
Q510-512 2SC1623 BUFFER
D503 1SS119
Q516,521 2SA812 SWITCHING
Q517,518 2SK2090 AMP
Q519 2SA812 BUFFER
D507 1S2837
D514 RD3.0E-BITN LIMITTER
D515 1SS119TD
IC510 NJM4556M-A OP AMP
IC506 CX10041 DECODER
Q509 2SC1623 VIDEO AMP
IC507 BX1167A WB
Q714 2SC1623 BUFFER
Q520 2SA812 SWITCHING
HV701
D8 1S2835 SWITCHING
D656 1S2835
IC702 BX1171 V. DEF
IC701 BX1171 H. DEF
D851 RD5.1E-L
GC-4 BOARD
Q703 2SD999 REG
Q704 2SA812 BUFFER
Q705 2SB798 REG
IC703 μPC4558G2 OP AMP
Q706 2SC1623 AMP
Q707 2SC1623 AMP
D701 1SS119TD
D707 1SS123 LIMITTER
Q710 2SC2713L SWITCHING
Q708 2SC2713L BUFFER
D706 RD7.5M-T2B1
Q711 2SA1163G
IC704 μPC4558G2 DHC
Q715 2SA812 BUFFER
Q712 2SB798 REG
Q524 2SA812
D519 1S2835
Q717,718 2SC2713L AMP
Q720 2SA1163G
Q719 2SC2713L SWITCHING
Q716 2SA1091 AMP
D704 1SS119TD
Q713 2SC1623 BUFFER
Q513,514


GC-5 BOARD
IC503 CX20065 DTL AMP
IC504 CX10018 NOISE CANCELER
IC509 CX20059 SAW TOOTH FORMER
IC507 BX1167A WB
IC851 CX7986 S.G
Refer to FUNCTION OF IC851 TERMINALS on page 48.
IC702 BX1171 V. DEF
IC701 BX1171 H. DEF
GC-4 BOARD
IC508 CX22017 ENCORDER
GC-3 BOARD
IC651 μPC358G
D651 1T25
D852 RD5.6M-B1
D851 RD5.1E-L1TN IC852 μPC4558G2
FL-1 BOARD
OVF
CN508 (RED) TO SW-28 BOARD
CN507 (WHT)
CN506 (WHT)
CN509 (WHT) TO SS-17 BOARD CN313
TO VC-2 BOARD (VIDEO)
CN851 (RED)
CN505 (WHT)
Q851 2SB772
Q515 2SA812
Q531 2SC1623
Q852 2SC1623
Q513,514 2SC1623 CLAMP
Q713 2SC1623 BUFFER
Q719 2SC2713L SWITCHING
Q716 2SA1091 AMP
D704 1SS119TD
Q717,718 2SC2713L AMP
Q720 2SA1163G
Q714 2SC1623 BUFFER
Q509 2SC1623 VIDEO AMP
Q510-512 2SC1623 BUFFER
Q520 2SA812 SWITCHING
D503 1SS119
Q501,506 2SC1623 BUFFER
Q502 2SC1623 CLAMP
Q506 1S2835
Q504 2SA812 BUFFER
Q503 2SA1226 LIMITTER
Q505 2SA812 LIMITTER
D504 1SS123
Q522 2SC1623 BUFFER
Q527 2SC1623 LIMITTER
Q652 2SC3381 AMP
Q508 2SA812 VIDEO AMP
Q651 2SC1623
Q529,530 2SC1623
D502 1S2837
D518 1SS119TD
D508 1S2835 SWITCHING
O P Q R S T U V W X Y Z A1 B1 C1 D1
1 2 3 4 5 6 7 8 9 10

CAMERA CAMERA

PA-1 (PRE AMP), VC-2 (Y & CHROMA SIGNALS PROCESS), GC-3 (OSCILLATOR), GC-4 (MODULATER), GC-5 (DELAY), FL-1 (FILTER SWITCH) PRINTED WIRING BOARDS

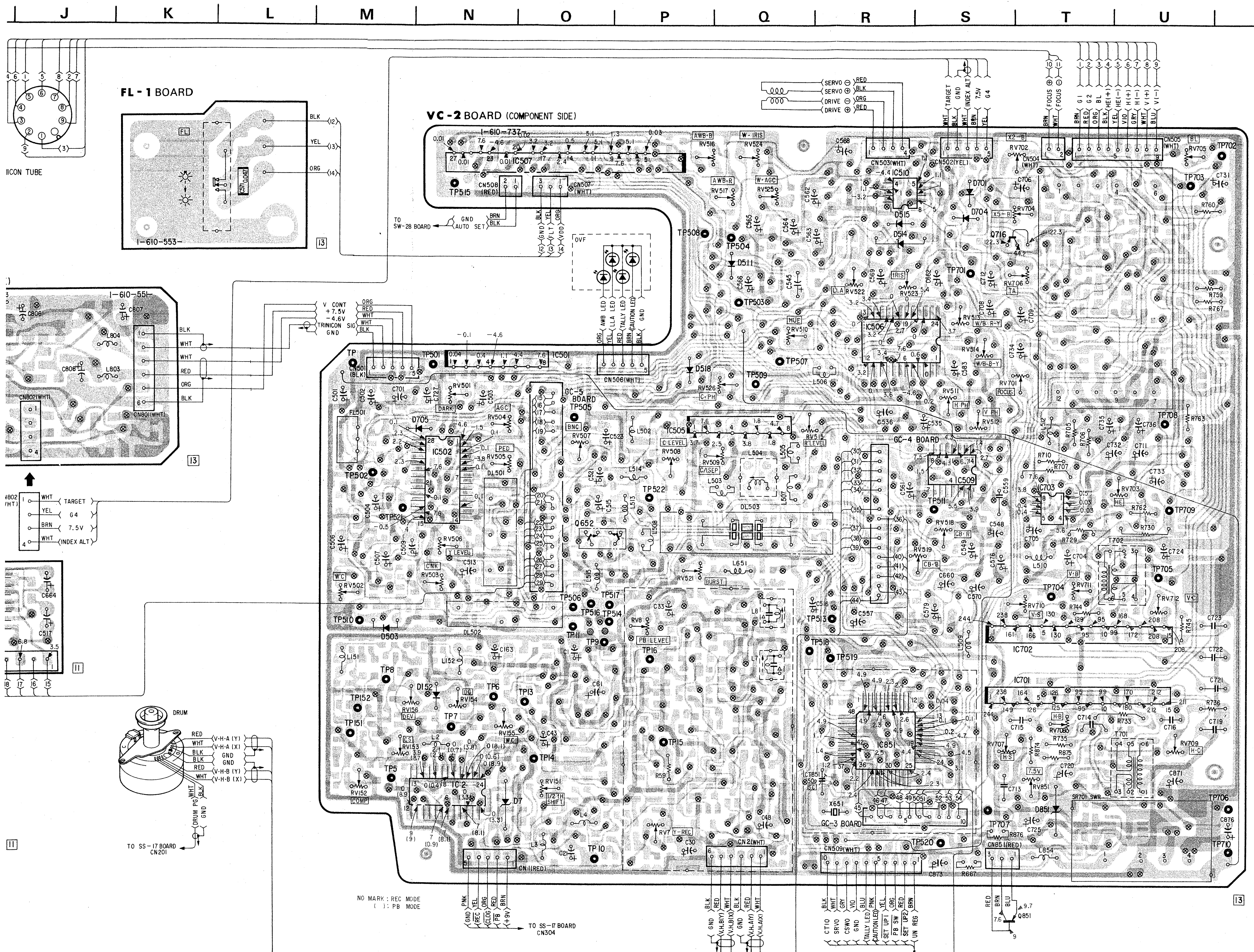
– Ref. No. PA-1 BOARD : 2,000 series, VC-2 BOARD, GC-3 BOARD, GC-4 BOARD, GC-5 BOARD : 1,000 series, FL-1 BOARD : 4,500 series –


A B C D E F G H I J K L M N O P
1 2 3 4 5 6 7 8 9 10
GC-3 BOARD (CONDUCTOR SIDE)
1-610-738-
GC-3 BOARD (COMPONENT SIDE)
1-610-738-
IC651
D651
X652
D852
54 53 52 51 50 49 48 47 46 45
SMF TRINICON TUBE
G4
FL-1 BOARD
1-610-553-
BLK (12)
YEL (13)
ORG (14)
VC-2 BOARD (COMPONENT SIDE)
1-610-737-
IC507
CN508 (RED)
CN507 (WHT)
TP515
TO SW-28 BOARD
GND
AUTO SET
OVF
PA-1 BOARD (CONDUCTOR SIDE)
1-610-551-
PA-1 BOARD (COMPONENT SIDE)
1-610-551-
CN801 (WHT)
CN802 (WHT)
T801
V CONT +7.5V -4.6V TRINICON SIG GND
CN802 (WHT)
TARGET
G4
7.5V
INDEX ALT
IC501
IC502
IC505
CN506 (WHT)
GC-5 BOARD
ORG YEL RED BRN BLK
AWB LED
LLA LED
TALLY LED
CAUTION LED
GND
GC-5 BOARD (CONDUCTOR SIDE)
1-611-418-
Q508
Q651
GC-5 BOARD (COMPONENT SIDE)
1-611-418-
IC503
IC504
29 28 27 26 25 24 23 22 21 20
19 18 17 16 15
GC-4 BOARD (CONDUCTOR SIDE)
1-611-417-
Q513
Q514
GC-4 BOARD (COMPONENT SIDE)
1-611-417-
IC508
44 43 42 41 40 39 38 37 36 35
34 33 32 31 30
DRUM
RED (V-H·A (Y))
WHT (V-H·A (X))
BLK GND
BLK GND
RED (V-H·B (Y))
WHT (V-H·B (X))
DRUM PG
TO SS-17 BOARD CN201
NO MARK : REC MODE
( ) : PB MODE
(GND) (REC) (CLOG) (PB) (+9V)
PNK YEL ORG RED BRN
TO SS-17 BOARD CN304
IC12
DL501
DL502
D503
D705
TP5 TP6 TP7 TP8 TP9 TP10 TP11 TP13 TP14 TP15 TP16
TP151 TP152
TP501 TP502 TP505 TP506 TP508 TP510 TP514 TP516 TP517 TP522
11
12
13

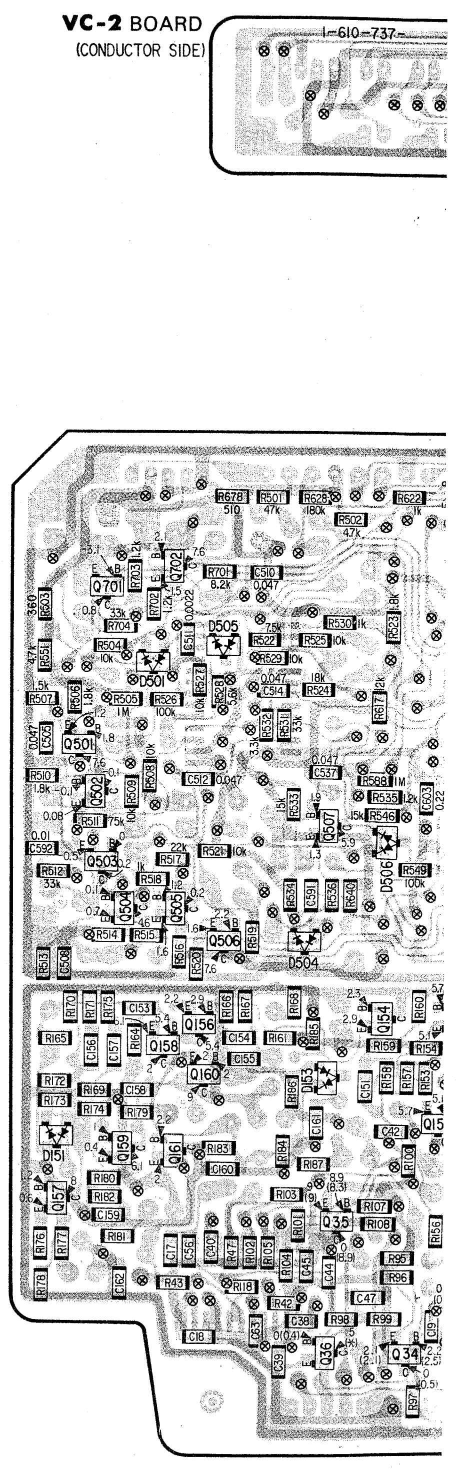
Caution:

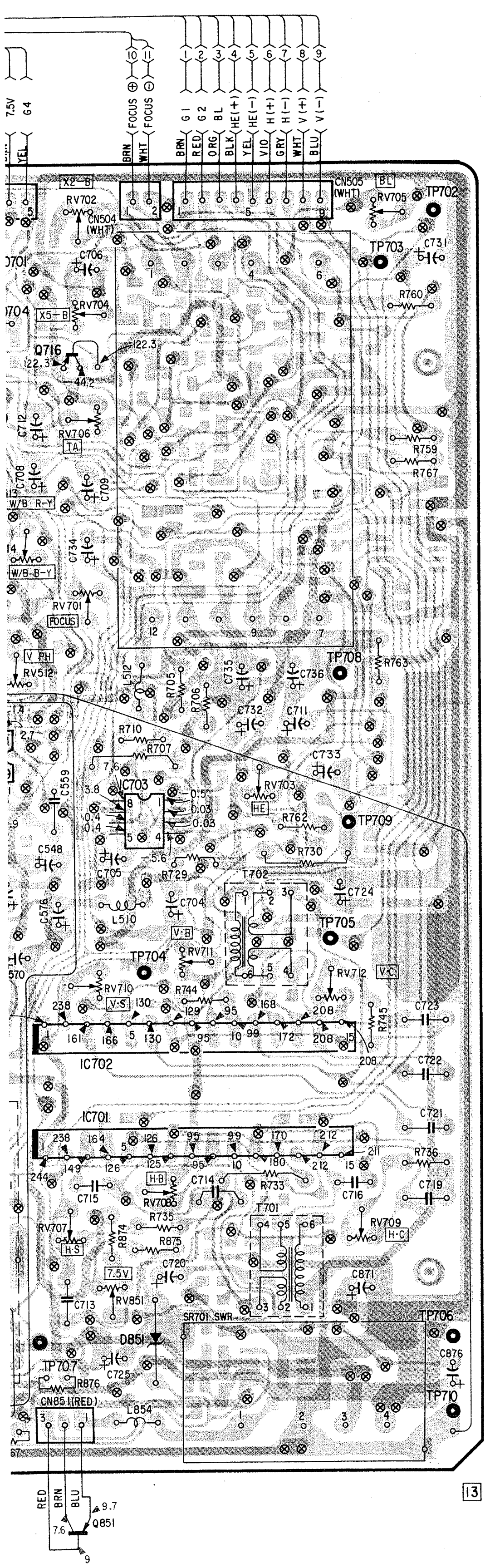
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the pattern face are indicated.

When indicating parts by reference number, please include the board name.


J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
ICON TUBE
FL-1 BOARD
1-610-553-
VC-2 BOARD (COMPONENT SIDE)
1-610-737-
1-610-551-
GC-5 BOARD
GC-4 BOARD
GC-3 BOARD
OVF
DRUM
TO SW-28 BOARD
TO SS-17 BOARD CN201
TO SS-17 BOARD CN304
TO SS-17 BOARD CN313
NO MARK : REC MODE
( ) : PB MODE
SERVO
DRIVE
TARGET
G4
7.5V
INDEX ALT
FOCUS
V CONT
TRINICON SIG
AWB LED
LLA LED
TALLY LED
CAUTION LED
GND
AUTO SET

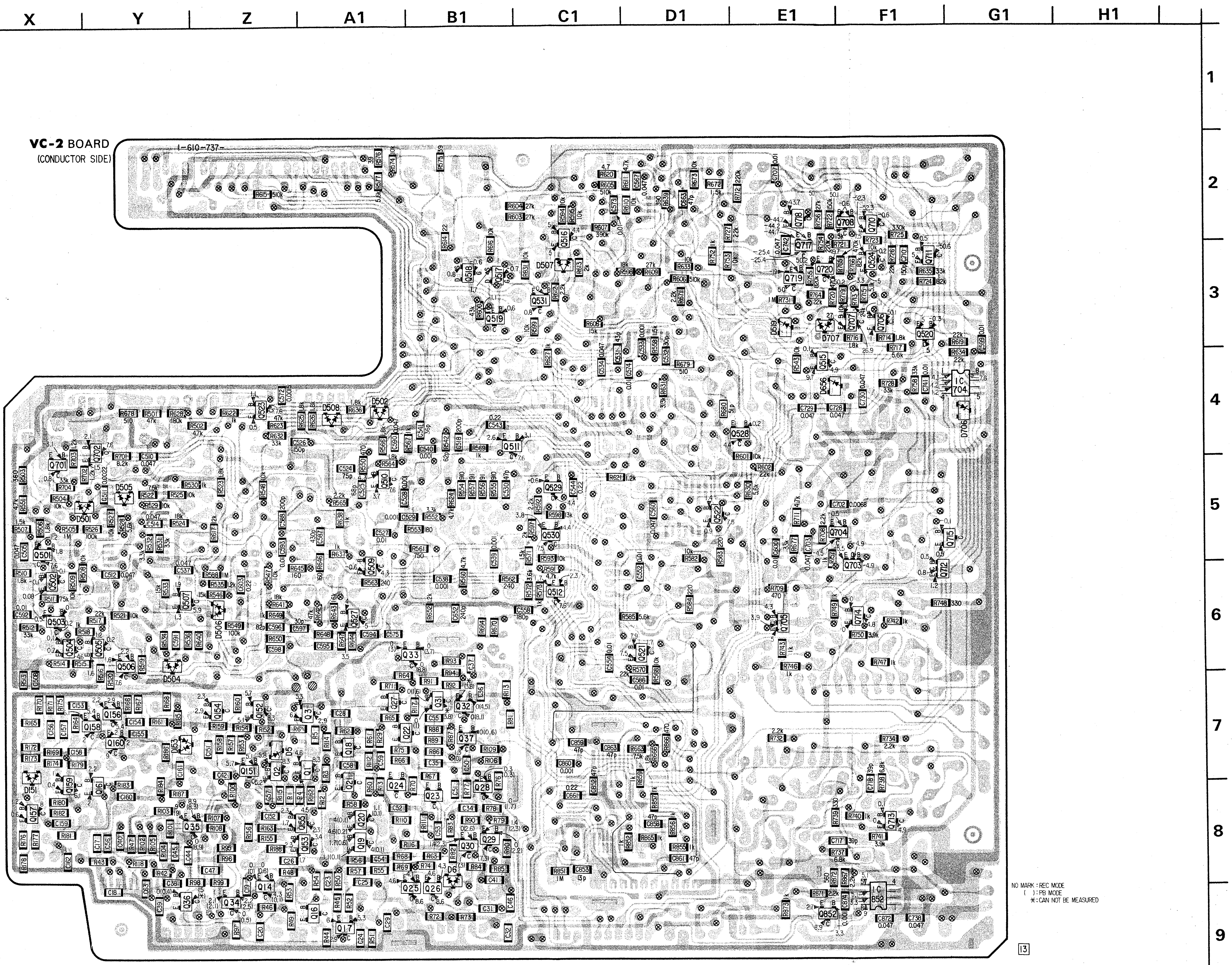
Q , IC	D	ADJ	TP
IC507		RV516,RV524 RV702,RV705	702
			515
IC510	701	RV517,RV525	703
718,708,710		RV704	
516 716 717	704		
711	515		508
716,524	507,514		504
518,517 720			
719	511		
		RV706	701
531		RV522	
519,707,706	519	RV 523	
520	707	RV513	503
515		RV510	
IC506			
IC704	656	RV514	
IC501			501
523	518	RV 701	507
	502		
	508 706	RV526	509
		RV501	
528			
702 511		RV511	
701		RV515 RV504 RV512	505 708
IC505			
510			
529	505	RV509	
IC509	501	RV507 RV505 RV508	502
522			
IC502 530 704	705	RV703	
715			522
501 IC703			511 521 709
509			
703,712		RV518	
502 652 512			
507	506	RV506	
527 714		RV519	
503 705		RV521	705
		RV503 RV711	
		RV502	704
504, 505		RV710,RV712	516,517
506 33 521	504		506
	503		510 513
		RV8	514 11
27,31,32			
156,154,152,3			9
IC 702			518
158			16,519
22 37			
160 18 IC 701	153		8
		RV156	
	5	RV154	6
151 2,1	152		13
21,24			152
159,161 28	151	RV155 RV708	7
23			
			151
157 IC851			
155,20 713		RV707,RV709	15
35		RV153	14
153,19,29		RV152	
30		RV151 RV851	5
IC2		CT851	
	7 6		706
14,25,26	851		707
36,34 IC852			
16 852		RV7	520
			710
17			10
Q , IC	D	ADJ	TP


VC-2 BOARD
(CONDUCTOR SIDE)
1-610-737-


T
U
V
W
FOCUS ⊕
FOCUS ⊖
G1
G2
BL
HE(+)
HE(−)
H(+)
H(−)
V(+)
V(−)
BRN
WHT
RED
ORG
BLK
YEL
VIO
GRY
BLU
TP702
TP703
TP704
TP705
TP706
TP707
TP708
TP709
TP710
IC701
IC702
Q716
D851
T701
T702
CN851(RED)
RED
BRN
BLU
Q851
13

Q , IC	D	ADJ	TP
IC507		RV516,RV524 RV702,RV705	702
			515
			703
IC510	701	RV517,RV525	
718,708,710		RV704	
516 716 717	704		
711	515		508
716,524	507,514		504
518,517 720			
719	511		
		RV706	701
531		RV522	
519,707,706	519	RV 523	503
520	707	RV513	
515		RV510	
IC506			
IC704	656	RV514	
IC501			501
	518	RV 701	507
523	502		
	508 706	RV526	509
		RV501	
528			
702 511		RV511	
		RV515	505
701		RV504 RV512	708
IC505			
510		RV509	
529	505	RV507	
IC509	501	RV505 RV508	502
522			
IC502 530 704	705	RV703	
715			522
IC703			511
501			521 709
509			
703,712		RV518	
502 652			
512		RV506	
507	506		
		RV519	
527 714			
503 705		RV521	705
		RV503	
504,505		RV502 RV711	704
521		RV710,RV712	516,517
506 33	504		506
	503		510 513
		RV8	514
			11
27,31,32			
156,154,152,3			9
IC702			518
158			16,519
22 37			
160 18 IC701	153		8
		RV156	
	5	RV154	6
151 2,1	152		13
21,24			152
159,161 28	151	RV155 RV708	7
23			
			151
157 IC851			
155,20		RV707,RV709	15
35 713		RV153	14
153,19,29		RV152	
30		RV151 RV851	5
IC2		CT851	
	7 6		706
14,25,26	851		707
36,34 IC852			
16 852		RV7	520
			710
17			10
Q , IC	D	ADJ	TP

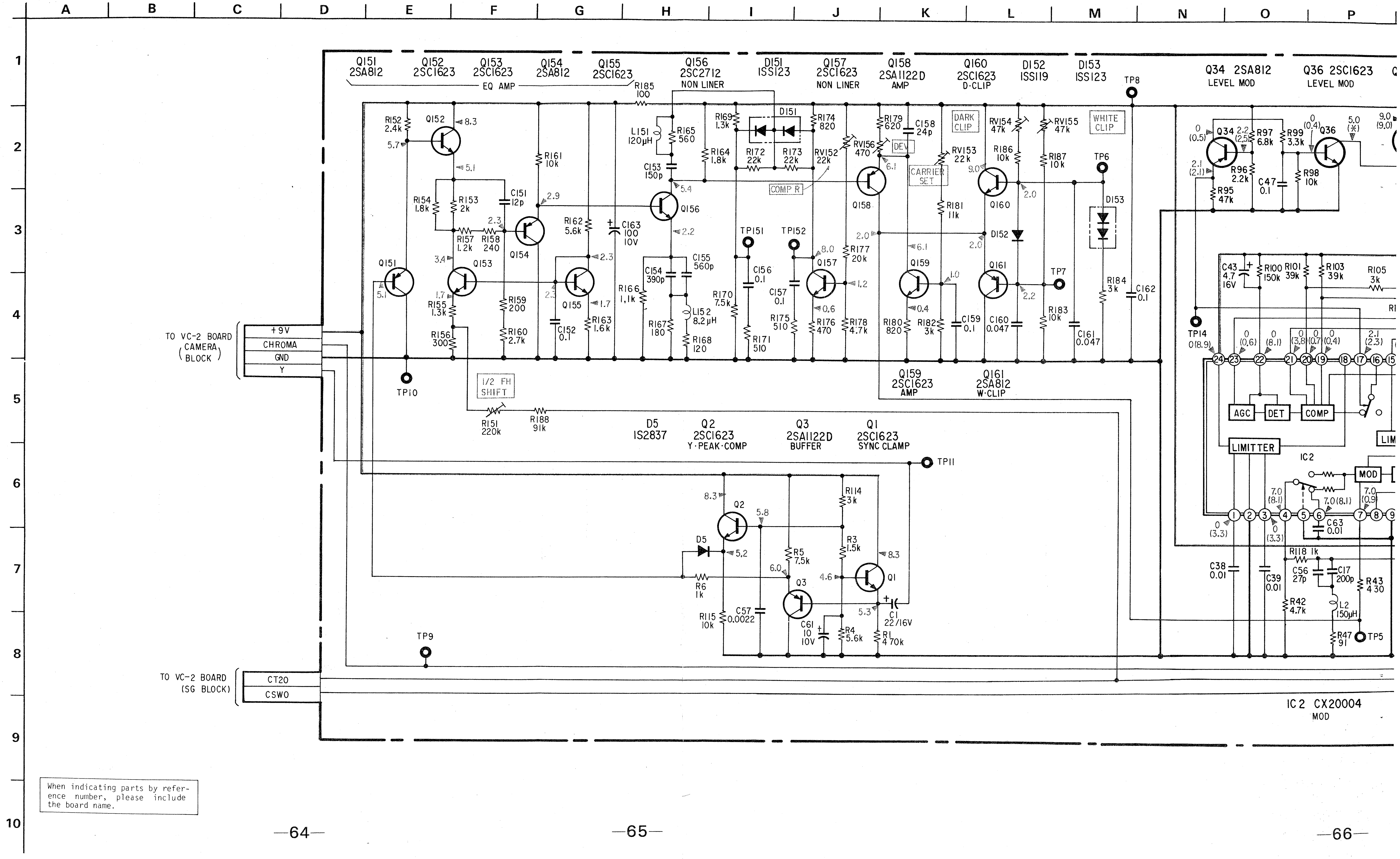
VC-2 BOARD
(CONDUCTOR SIDE)


X
Y
Z
A1
B1
C1
D1
E1
F1
G1
H1
1
2
3
4
5
6
7
8
9
10
1-610-737-
IC704
IC852
D506
D507
D508
D502
D504
D505
D501
D151
Q501
Q503
Q504
Q505
Q506
Q507
Q509
Q511
Q512
Q516
Q517
Q518
Q519
Q520
Q521
Q528
Q529
Q530
Q531
Q701
Q702
Q703
Q704
Q705
Q706
Q707
Q708
Q710
Q711
Q712
Q713
Q714
Q715
Q716
Q717
Q719
Q720
Q852
13

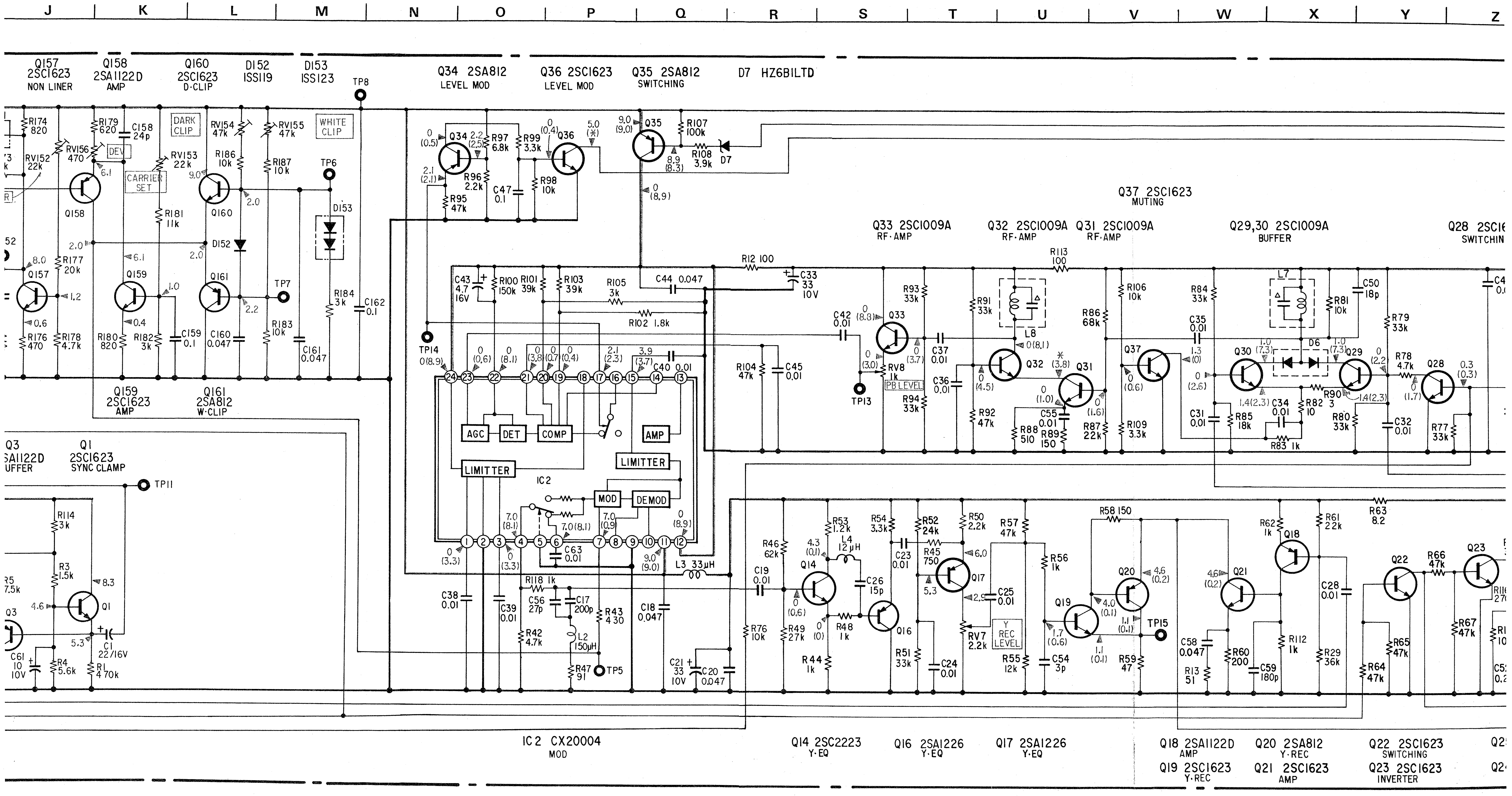
NO MARK : REC MODE
( ) : PB MODE
*: CAN NOT BE MEASURED

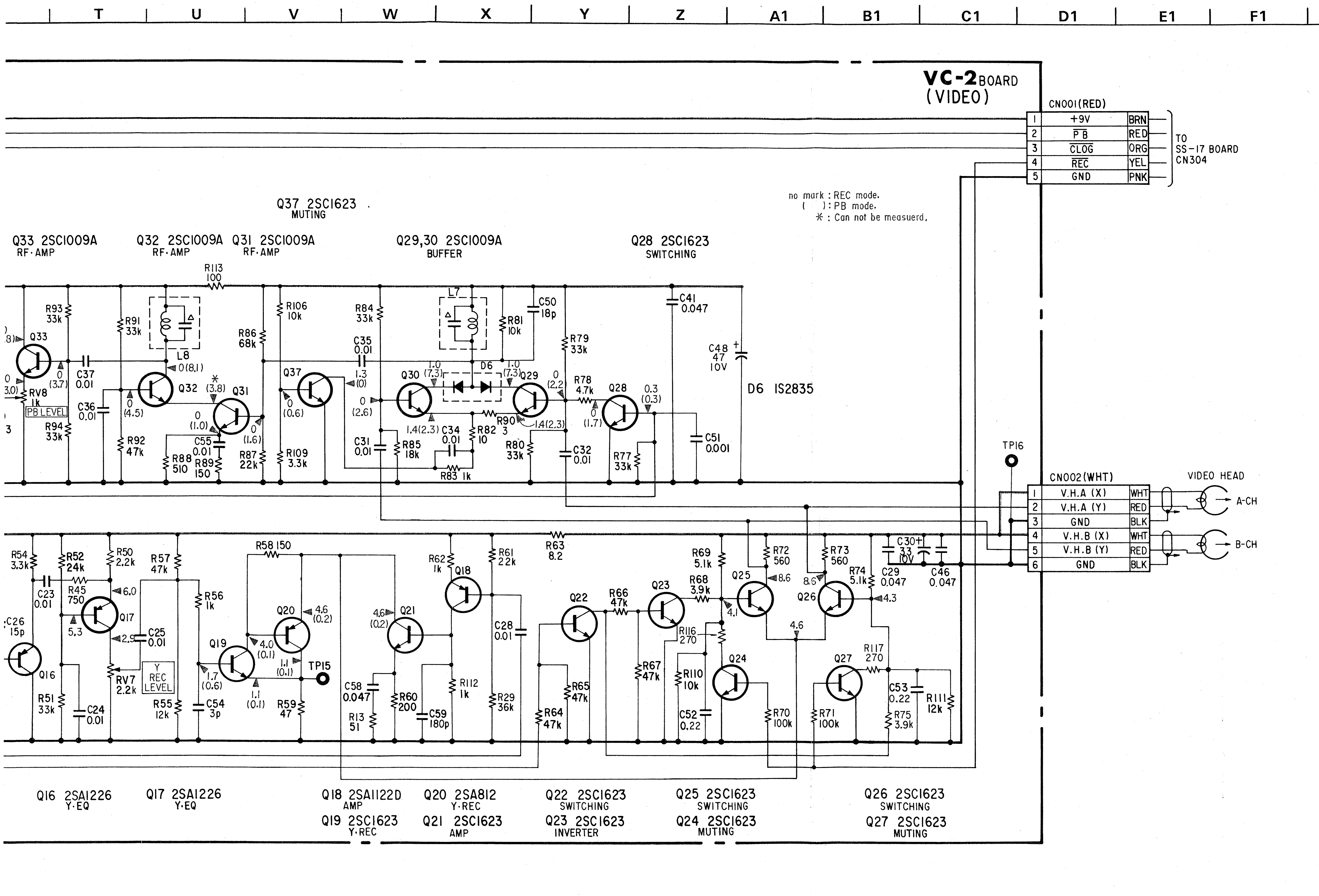
VC-2 (Y & CHROMA SIGNALS PROCESS) SCHEMATIC DIAGRAM

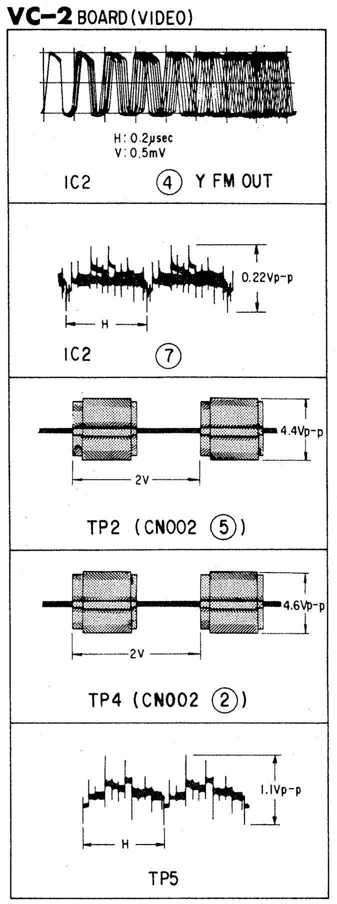
– Ref. No. VC-2 BOARD : 1,000 series –


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
2
3
4
5
6
7
8
9
10
Q151 2SA812
Q152 2SC1623
Q153 2SC1623
Q154 2SA812
Q155 2SC1623
EQ AMP
Q156 2SC2712
NON LINER
D151 1SS123
Q157 2SC1623
NON LINER
Q158 2SA1122D
AMP
Q160 2SC1623
D·CLIP
D152 1SS119
D153 1SS123
TP8
Q34 2SA812
LEVEL MOD
Q36 2SC1623
LEVEL MOD
R185 100
R152 2.4k
R154 1.8k
R153 2k
C151 12p
R157 1.2k
R158 240
R155 1.3k
R156 300
R159 200
R160 2.7k
R161 10k
R162 5.6k
C152 0.1
R163 1.6k
C163 100 10V
L151 120μH
R165 560
C153 150p
R164 1.8k
C154 390p
C155 560p
R166 1.1k
R167 180
L152 8.2μH
R168 120
R169 1.3k
R172 22k
R173 22k
R174 820
RV152 22k
COMP R
C156 0.1
R170 7.5k
R171 510
TP151
TP152
C157 0.1
R175 510
R176 470
R177 20k
R178 4.7k
RV156 470
DEV
R179 620
C158 24p
DARK CLIP
RV154 47k
RV155 47k
WHITE CLIP
RV153 22k
CARRIER SET
R186 10k
R187 10k
TP6
R181 11k
R180 820
R182 3k
C159 0.1
C160 0.047
R183 10k
C161 0.047
TP7
R184 3k
C162 0.1
Q159 2SC1623
AMP
Q161 2SA812
W·CLIP
TO VC-2 BOARD (CAMERA BLOCK)
+9V
CHROMA
GND
Y
TP10
1/2 FH SHIFT
R151 220k
R188 91k
D5 1S2837
Q2 2SC1623
Y·PEAK·COMP
Q3 2SA1122D
BUFFER
Q1 2SC1623
SYNC CLAMP
TP11
R114 3k
R5 7.5k
R3 1.5k
R6 1k
R115 10k
C57 0.0022
C61 10 10V
R4 5.6k
C1 22/16V
R1 470k
TP9
TO VC-2 BOARD (SG BLOCK)
CT20
CSWO
R97 6.8k
R99 3.3k
R96 2.2k
R95 47k
C47 0.1
R98 10k
C43 4.7 16V
R100 150k
R101 39k
R103 39k
R105 3k
TP14
AGC
DET
COMP
LIMITTER
IC2
MOD
C63 0.01
C38 0.01
C39 0.01
R118 1k
C56 27p
C17 200p
R43 430
R42 4.7k
L2 150μH
R47 91
TP5
IC2 CX20004
MOD

When indicating parts by reference number, please include the board name.


J K L M N O P Q R S T U V W X Y Z
Q157 2SC1623 NON LINER
Q158 2SA1122D AMP
Q160 2SC1623 D·CLIP
D152 ISS119
D153 ISS123
TP8
Q34 2SA812 LEVEL MOD
Q36 2SC1623 LEVEL MOD
Q35 2SA812 SWITCHING
D7 HZ6BILTD
R174 820
R179 620
C158 24p
DARK CLIP
RV154 47k
RV155 47k
WHITE CLIP
RV152 22k
RV156 470
DEV
RV153 22k
CARRIER SET
R186 10k
R187 10k
TP6
D153
R181 11k
R177 20k
D152
Q157
Q159
Q161
TP7
R184 3k
C162 0.1
R176 470
R178 4.7k
R180 820
R182 3k
C159 0.1
C160 0.047
R183 10k
C161 0.047
Q159 2SC1623 AMP
Q161 2SA812 W·CLIP
R97 6.8k
R99 3.3k
R96 2.2k
C47 0.1
R98 10k
R95 47k
R107 100k
R108 3.9k
D7
Q37 2SC1623 MUTING
Q33 2SC1009A RF·AMP
Q32 2SC1009A RF·AMP
Q31 2SC1009A RF·AMP
Q29,30 2SC1009A BUFFER
Q28 2SC1 SWITCHIN
R12 100
C33 33 10V
R113 100
C43 4.7 16V
R100 150k
R101 39k
R103 39k
R105 3k
C44 0.047
R102 1.8k
TP14
C42 0.01
R93 33k
R91 33k
L8
R106 10k
R84 33k
L7
R81 10k
C50 18p
R86 68k
C35 0.01
R79 33k
C37 0.01
C40 0.01
R104 47k
C45 0.01
RV8 1k
PB LEVEL
TP13
R94 33k
C36 0.01
R92 47k
C55 0.01
R88 510
R89 150
R87 22k
R109 3.3k
C31 0.01
R85 18k
C34 0.01
R82 10
R80 33k
R90 3
R83 1k
C32 0.01
R78 4.7k
R77 33k
D6
AGC DET COMP AMP
LIMITTER
LIMITTER
IC2
MOD DEMOD
Q3 2SA1122D BUFFER
Q1 2SC1623 SYNC CLAMP
TP11
R114 3k
R3 1.5k
R4 5.6k
R1 470k
C1 22/16V
C61 10 10V
C63 0.01
C38 0.01
C39 0.01
R118 1k
C56 27p
C17 200p
R43 430
L2 150μH
R42 4.7k
R47 91
TP5
C18 0.047
L3 33μH
C21 33 10V
C20 0.047
C19 0.01
R46 62k
R76 10k
R49 27k
R44 1k
R53 1.2k
L4 12μH
C26 15p
R48 1k
R54 3.3k
C23 0.01
R52 24k
R45 750
R50 2.2k
R51 33k
C24 0.01
C25 0.01
RV7 2.2k
Y REC LEVEL
R57 47k
R56 1k
R55 12k
C54 3p
R58 150
TP15
R59 47
C58 0.047
R13 51
R60 200
C59 180p
R62 1k
R61 2.2k
R112 1k
C28 0.01
R29 36k
R63 8.2
R66 47k
R67 47k
R65 47k
R64 47k
IC2 CX20004 MOD
Q14 2SC2223 Y·EQ
Q16 2SA1226 Y·EQ
Q17 2SA1226 Y·EQ
Q18 2SA1122D AMP
Q19 2SC1623 Y·REC
Q20 2SA812 Y·REC
Q21 2SC1623 AMP
Q22 2SC1623 SWITCHING
Q23 2SC1623 INVERTER


T
U
V
W
X
Y
Z
A1
B1
C1
D1
E1
F1
G1
H1
1
2
3
4
5
6
7
8
9
10
VC-2 BOARD
(VIDEO)
CN001(RED)
1 +9V BRN
2 PB RED
3 CLOG ORG
4 REC YEL
5 GND PNK
TO
SS-17 BOARD
CN304
no mark : REC mode.
( ) : PB mode.
✻ : Can not be measuerd.
Q37 2SC1623
MUTING
Q33 2SC1009A
RF·AMP
Q32 2SC1009A
RF·AMP
Q31 2SC1009A
RF·AMP
Q29,30 2SC1009A
BUFFER
Q28 2SC1623
SWITCHING
R113 100
R93 33k
R91 33k
L8
R106 10k
R86 68k
R84 33k
C35 0.01
L7
R81 10k
C50 18p
R79 33k
C41 0.047
C48 47 10V
D6 IS2835
RV8 1k
PB LEVEL
C37 0.01
C36 0.01
R94 33k
R92 47k
R88 510
C55 0.01
R89 150
R87 22k
R109 3.3k
C31 0.01
R85 18k
C34 0.01
R82 10
R83 1k
R90 3
R80 33k
R78 4.7k
C32 0.01
R77 33k
C51 0.001
D6
TP16
CN002(WHT)
1 V.H.A (X) WHT
2 V.H.A (Y) RED
3 GND BLK
4 V.H.B (X) WHT
5 V.H.B (Y) RED
6 GND BLK
VIDEO HEAD
A-CH
B-CH
R54 3.3k
R52 24k
R50 2.2k
R57 47k
C23 0.01
R45 750
R56 1k
R58 150
R62 1k
R61 22k
R63 8.2
R69 5.1k
R72 560
R73 560
C30 33 10V
C46 0.047
R74 5.1k
C29 0.047
C26 15p
RV7 2.2k
Y REC LEVEL
C25 0.01
R51 33k
C24 0.01
R55 12k
C54 3p
R59 47
TP15
C58 0.047
R13 51
R60 200
C59 180p
R112 1k
C28 0.01
R29 36k
R64 47k
R65 47k
R66 47k
R67 47k
R68 3.9k
R116 270
R110 10k
C52 0.22
R70 100k
R71 100k
R117 270
C53 0.22
R75 3.9k
R111 12k
Q16 2SA1226
Y·EQ
Q17 2SA1226
Y·EQ
Q18 2SA1122D
AMP
Q19 2SC1623
Y·REC
Q20 2SA812
Y·REC
Q21 2SC1623
AMP
Q22 2SC1623
SWITCHING
Q23 2SC1623
INVERTER
Q25 2SC1623
SWITCHING
Q24 2SC1623
MUTING
Q26 2SC1623
SWITCHING
Q27 2SC1623
MUTING


VC-2 BOARD (VIDEO)
H: 0.2μsec
V: 0.5mV
IC2 ④ Y FM OUT
0.22Vp-p
H
IC2 ⑦
4.4Vp-p
2V
TP2 (CN002 ⑤)
4.6Vp-p
2V
TP4 (CN002 ②)
1.1Vp-p
H
TP5

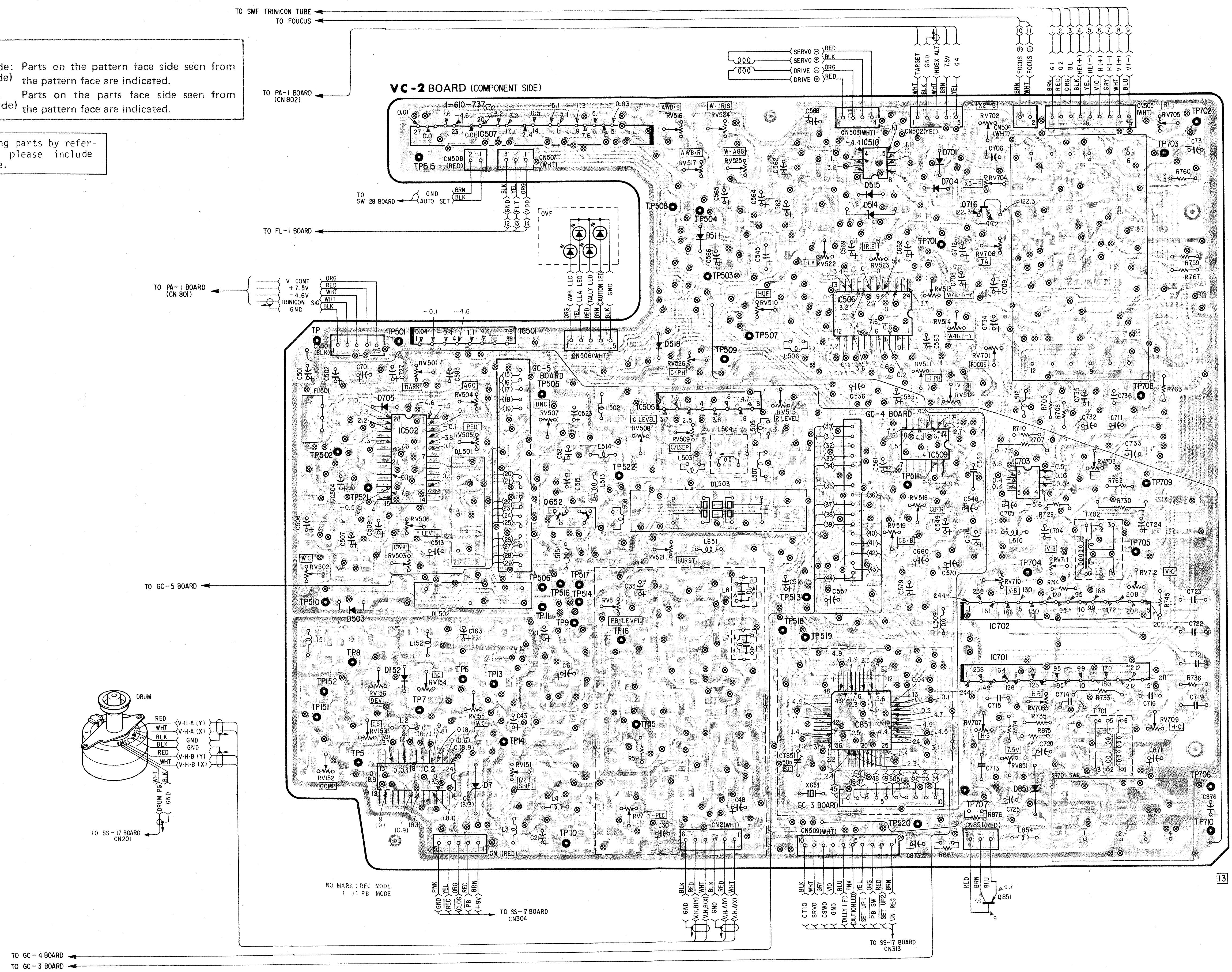
VC-2 (Y & CHROMA SIGNALS PROCESS) PRINTED WIRING BOARD

– Ref. No. VC-2 BOARD : 1,000 series –

Caution:

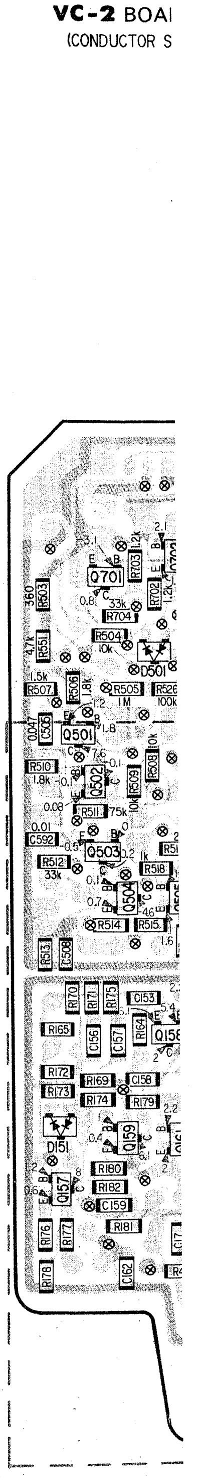
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the pattern face are indicated.

When indicating parts by reference number, please include the board name.



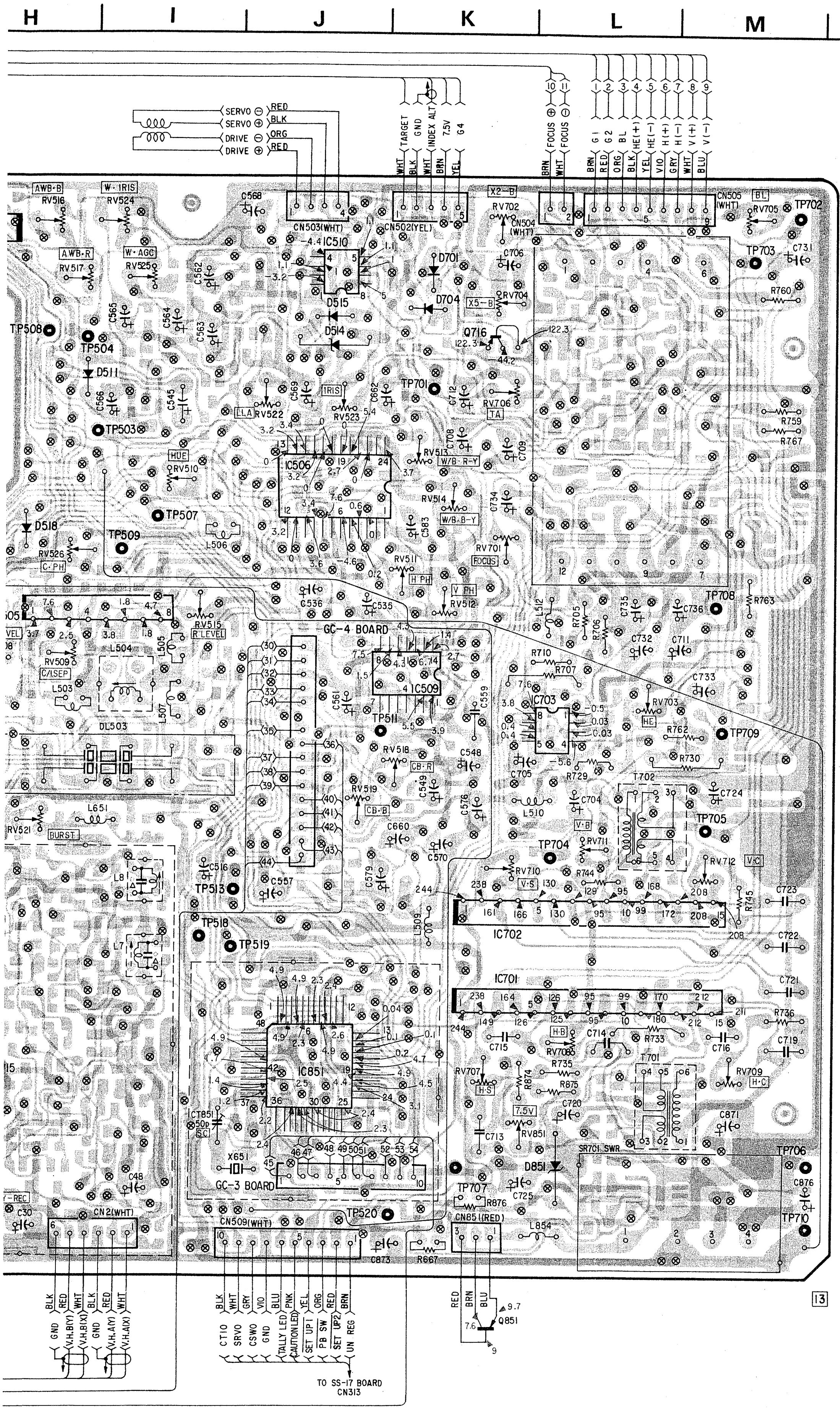
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
2
3
4
5
6
7
8
9
10
VC-2 BOARD (COMPONENT SIDE)
TO SMF TRINICON TUBE
TO FOUCUS
TO PA-1 BOARD (CN802)
TO SW-28 BOARD
GND
AUTO SET
BRN
BLK
TO FL-1 BOARD
(GND)
(FLT)
(VDD)
OVF
AWB LED
LLA LED
TALLY LED
CAUTION LED
GND
TO PA-1 BOARD (CN 801)
V CONT
+7.5V
−4.6V
TRINICON SIG
GND
SERVO ⊖
SERVO ⊕
DRIVE ⊖
DRIVE ⊕
TARGET
GND
INDEX ALT
7.5V
G4
FOCUS ⊕
FOCUS ⊖
G1
G2
BL
HE(+)
HE(−)
H(+)
H(−)
V(+)
V(−)
CN503(WHT)
CN502(YEL)
CN504 (WHT)
CN505 (WHT)
CN508 (RED)
CN507 (WHT)
CN501 (BLK)
CN506(WHT)
IC507
IC510
IC501
IC502
IC505
IC506
IC509
IC703
IC702
IC701
IC2
IC851
GC-5 BOARD
GC-4 BOARD
GC-3 BOARD
DL501
DL502
DL503
TO GC-5 BOARD
DRUM
RED
WHT
BLK
V·H·A (Y)
V·H·A (X)
GND
V·H·B (Y)
V·H·B (X)
DRUM PG
TO SS-17 BOARD CN201
NO MARK : REC MODE
( ) : PB MODE
CN1(RED)
GND
REC
CLOG
PB
+9V
TO SS-17 BOARD CN304
CN2(WHT)
V.H.B(Y)
V.H.B(X)
V.H.A(Y)
V.H.A(X)
CN509(WHT)
CT10
SRVO
CSWO
TALLY LED
CAUTION LED
SET UP1
PB SW
SET UP2
UN REG
TO SS-17 BOARD CN313
CN851(RED)
Q851
TO GC-4 BOARD
TO GC-3 BOARD
13

Q , IC	D	ADJ	TP
IC507		RV516,RV524 RV702,RV705	702
			515 703
IC510	701	RV517,RV525	
718,708,710		RV704	
516 716 717 711	704 515		508 504
716,524 518,517 720 719	507,514 511		
		RV706	701
531		RV522 RV 523	
519,707,706 520	519 707	RV513	503
515 IC506		RV510	
IC704	656	RV514	
IC501 523	518 502 508 706	RV 701 RV526	501 507 509
528		RV501 RV511	
702 511 701 IC505		RV515 RV504 RV512	505 708
510 529 IC509 522	505 501	RV509 RV507 RV505 RV508	502
IC502 530 704 715 IC703	705	RV703	522 511 521 709
501 509 703,712 502 652 512 507	506	RV518 RV506 RV519	
527 714 503 705		RV521 RV503 RV502 RV711	705 704
504,505 506 33 521	504 503	RV710,RV712 RV8	516,517 506 510 513 514 11
27,31,32 156,154,152,3 IC 702 158			9 518 16,519
22 37 160 18 IC 701	153		8
151 2,1 21,24 159,161 28 23	5 152 151	RV156 RV154 RV155 RV708	6 13 152 7 151
157 IC851 155,20 35 713		RV707,RV709 RV153	15 14
153,19,29 30 IC2		RV152 RV151 RV851 CT851	5
14,25,26 36,34 IC852 16 852 17	7 6 851	RV7	706 707 520 710 10
Q , IC	D	ADJ	TP

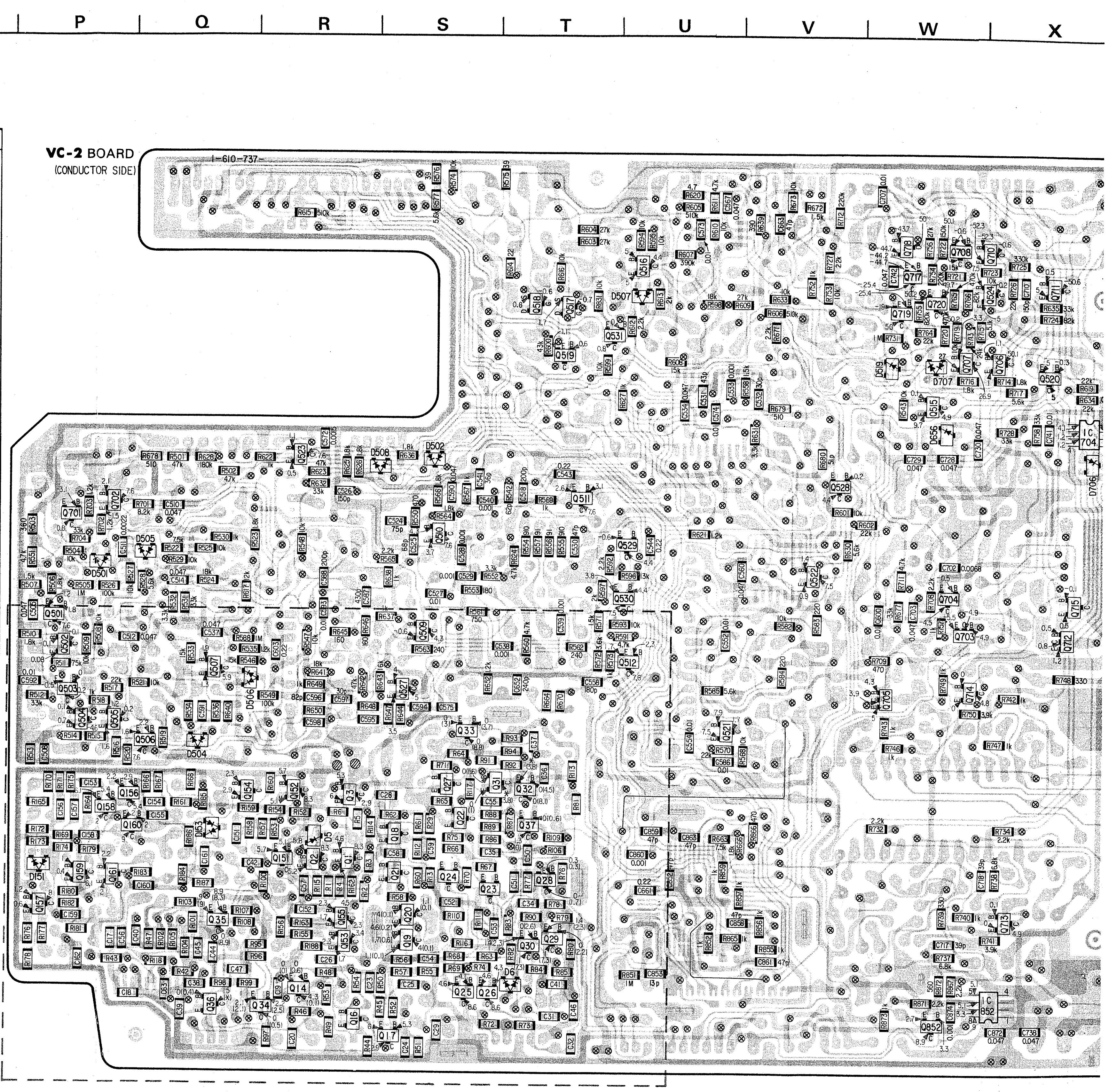


VC-2 BOA
(CONDUCTOR S
Q701
Q501
Q503
Q159
D151

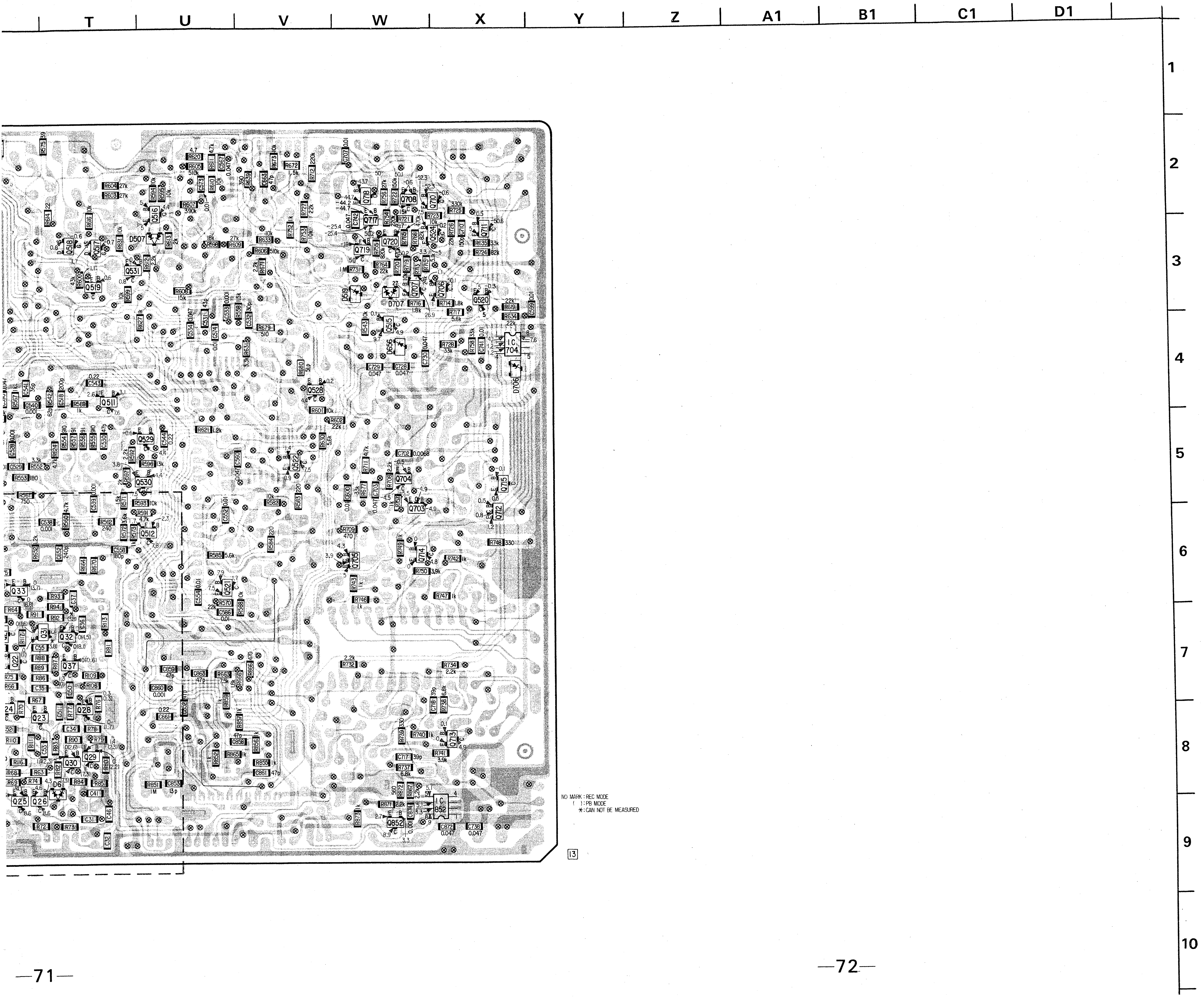
Note: Refer to


H
I
J
K
L
M
GC-4 BOARD
GC-3 BOARD
CN503(WHT)
CN502(YEL)
CN504(WHT)
CN505(WHT)
CN509(WHT)
CN2(WHT)
CN65(RED)
IC506
IC509
IC510
IC702
IC701
IC851
SERVO ⊖ RED
SERVO ⊕ BLK
DRIVE ⊖ ORG
DRIVE ⊕ RED
TARGET
GND
INDEX ALT
7.5V
G4
FOCUS ⊕
FOCUS ⊖
G1
G2
BL
HE(+)
HE(−)
H(+)
H(−)
V(+)
V(−)
GND
(V.H.BY)
(V.H.AY)
(V.H.AX)
CT10
SERVO
CSWD
GND
TALLY LED
CAUTION LED
SET UP1
FB SW
SET UP2
UN REG
TO SS-17 BOARD CN313
Q851
13

Q , IC	D	ADJ	TP
IC507		RV516,RV524 RV702,RV705	702
			515 703
IC510	701	RV517,RV525	
718,708,710		RV704	
516 716 717 711	704 515		508 504
716,524 518,517 720	507,514		
719	511		
531		RV706 RV522 RV 523	701
519,707,706	519		503
520	707	RV513	
515 IC506		RV510	
IC704	656	RV514	
IC501			501
523	518 502	RV 701	507
	508 706	RV526 RV501	509
528		RV511	
702 511 701		RV515 RV504 RV512	505 708
IC505			
510 529	505	RV509	
IC509 522	501	RV507 RV505 RV508	502
IC502 530 704 715	705	RV703	522 511
501 IC703 509			521 709
703,712		RV518	
502 652 512 507	506	RV506	
527 714 503 705		RV519	
		RV521 RV503	705
504,505		RV502 RV711	704
521		RV710,RV712	516,517
506 33	504		506
	503		510 513 514
		RV8	11
27,31,32 156,154,152,3			9
IC 702 158			518 16,519
22 37 160 18 IC 701	153		8
151 2,1	5 152	RV156 RV154	6 13
21,24 159,161 28 23	151	RV155 RV708	152 7
			151
157 IC851			
155,20 35 713		RV707,RV709 RV153	14 15
153,19,29 30		RV152 RV151 RV851	5
IC 2		CT851	
14,25,26 36,34 IC852	7 6 851		706 707
16 852		RV7	520 710
17			10
Q , IC	D	ADJ	TP


N
O
P
Q
R
S
T
U
V
W
X
VC-2 BOARD
(CONDUCTOR SIDE)
1-610-737-
IC704
IC852

Note: Refer to enlarged VC-2 Board on page 89, 90.


T
U
V
W
X
Y
Z
A1
B1
C1
D1
1
2
3
4
5
6
7
8
9
10
IC 704
IC 852
13

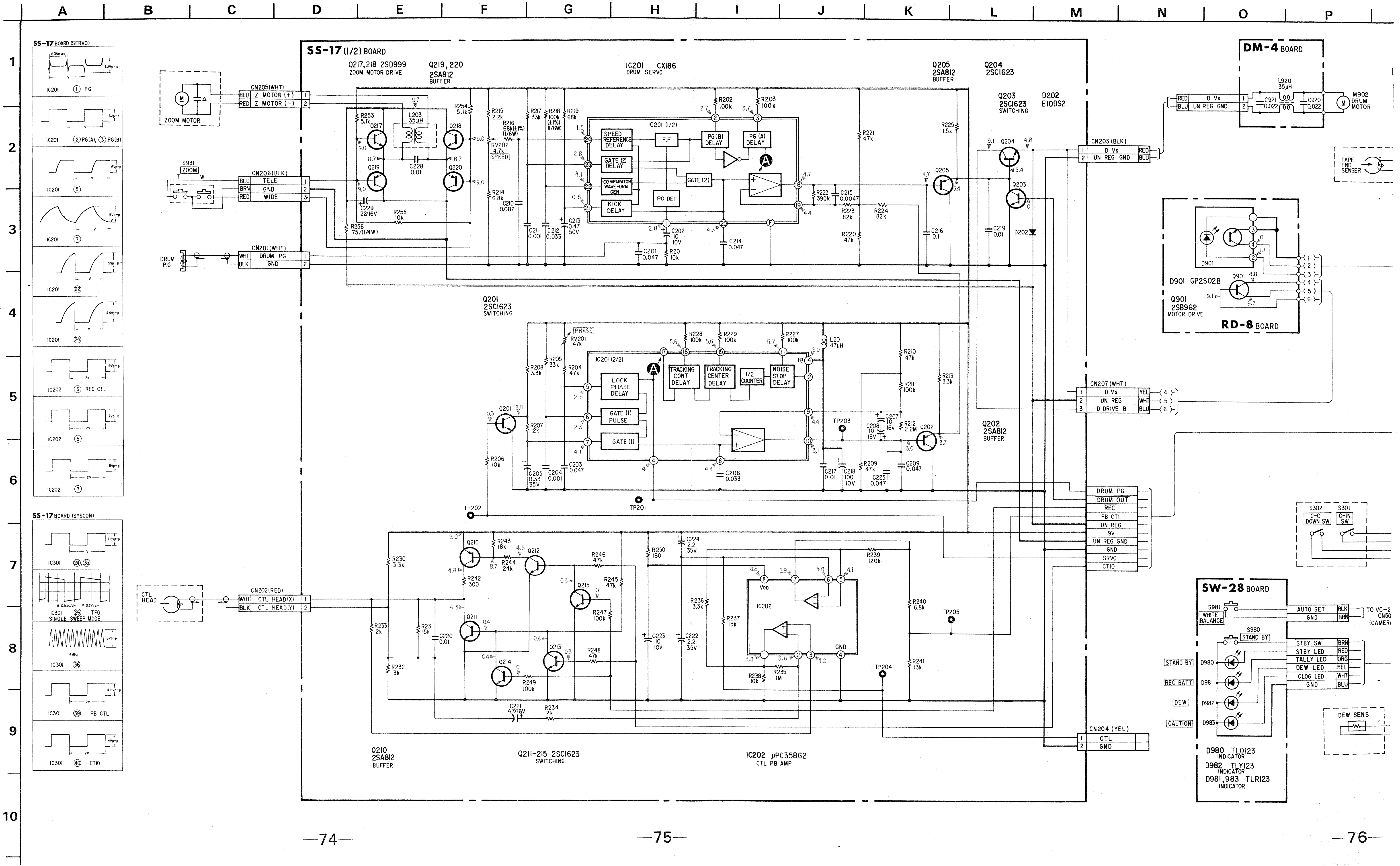
NO MARK : REC MODE
( ) : PB MODE
✱ : CAN NOT BE MEASURED

SERVO, SYSTEM CONTROL

SERVO, SYSTEM CONTROL SERVO, SYSTEM CONTROL

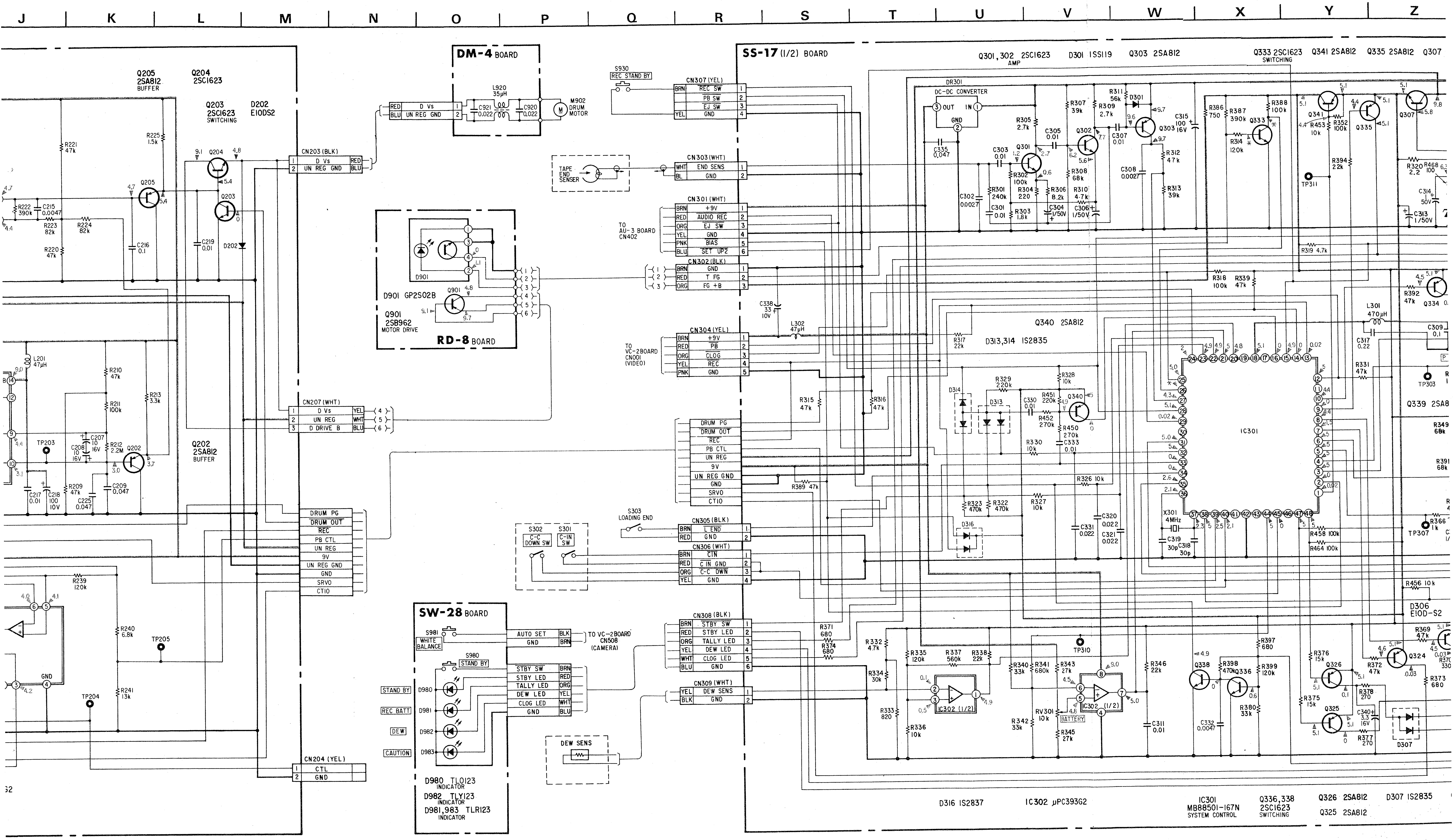
SS-17 (SERVO/SYSTEM CONTROL), DM-4 (DRUM MOTOR), RD-8 (DRUM MOTOR DRIVE/T. FG DET), SW-28 (FUNCTION, SWITCH & IND), JK-2 (JACK), LM-12 (LOADING MOTOR) SCHEMATIC DIAGRAM

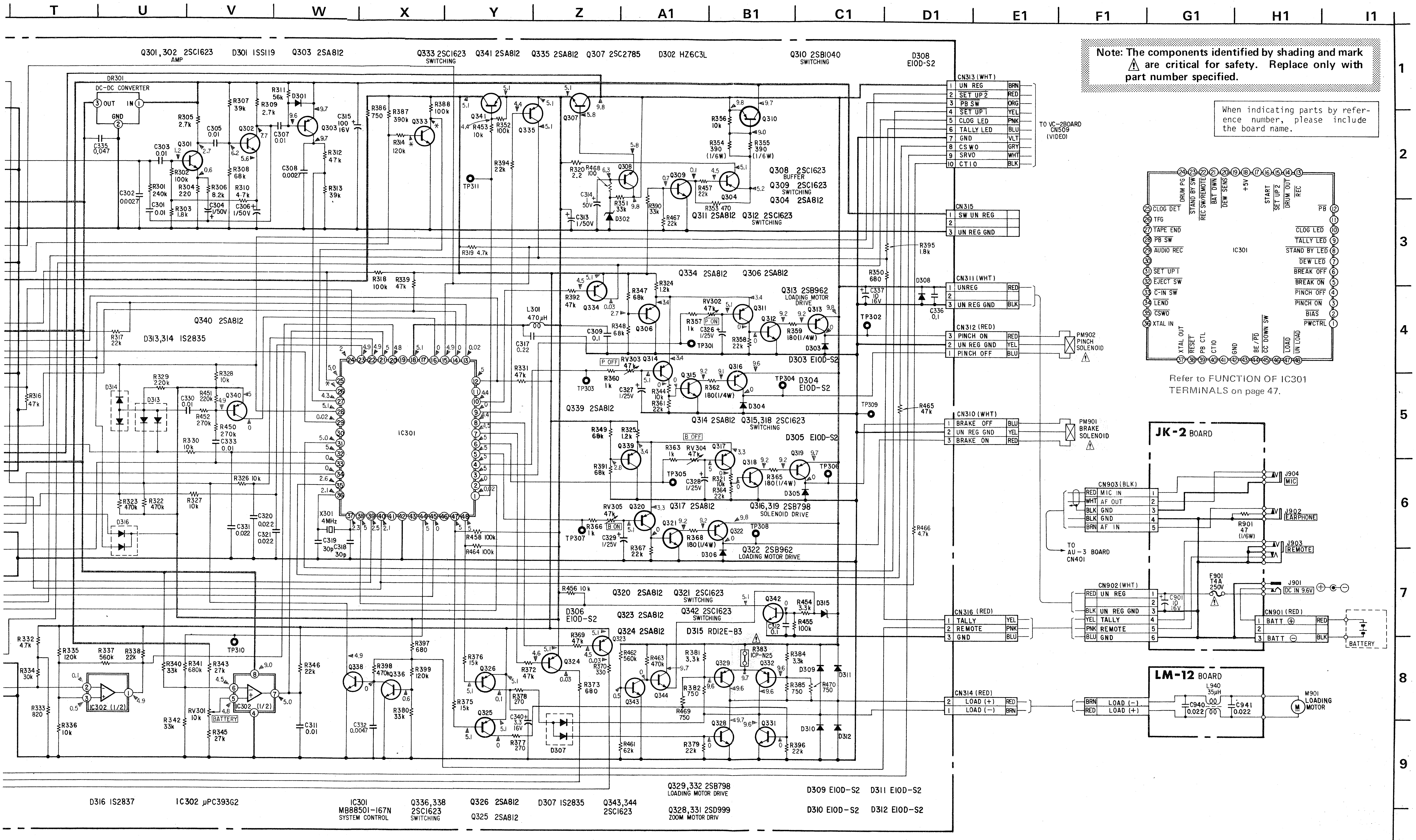
– Ref. No. SS-17 BOARD : 3,000 series, DM-4, RD-8, SW-28, JK-2, LM-12 BOARD : 3,900 series –



A B C D E F G H I J K L M N O P
1 2 3 4 5 6 7 8 9 10
SS-17 BOARD (SERVO)
8.35msec
1.3Vp-p
IC201 ① PG
6Vp-p
IC201 ②PG(A), ③PG(B)
6Vp-p
IC201 ⑤
8Vp-p
IC201 ⑦
9Vp-p
IC201 ㉒
4.4Vp-p
IC201 ㉔
9Vp-p
IC202 ③ REC CTL
7Vp-p
IC202 ⑤
8Vp-p
IC202 ⑦
SS-17 BOARD (SYSCON)
4.2Vp-p
IC301 ㉔, ㉟
IC301 ㉖ TFG SINGLE SWEEP MODE
6Vp-p
4MHz
IC301 ㊱
4.8Vp-p
IC301 ㊴ PB CTL
4Vp-p
IC301 ㊵ CTIO
ZOOM MOTOR
CN205(WHT)
BLU Z MOTOR (+) 1
RED Z MOTOR (−) 2
S931 ZOOM T W
CN206(BLK)
BLU TELE 1
BRN GND 2
RED WIDE 3
DRUM P.G
CN201(WHT)
WHT DRUM PG 1
BLK GND 2
CTL HEAD
CN202(RED)
WHT CTL HEAD(X) 1
BLK CTL HEAD(Y) 2
SS-17 (1/2) BOARD
Q217, 218 2SD999 ZOOM MOTOR DRIVE
Q219, 220 2SA812 BUFFER
IC201 CX186 DRUM SERVO
Q205 2SA812 BUFFER
Q204 2SC1623
Q203 2SC1623 SWITCHING
D202 E10DS2
IC201 (1/2)
SPEED REFERENCE DELAY
GATE (2) DELAY
COMPARATOR WAVEFORM GEN
KICK DELAY
F.F
PG DET
PG(B) DELAY
PG (A) DELAY
GATE (2)
RV202 4.7k SPEED
Q201 2SC1623 SWITCHING
IC201 (2/2)
LOCK PHASE DELAY
GATE (1) PULSE
GATE (1)
TRACKING CONT DELAY
TRACKING CENTER DELAY
1/2 COUNTER
NOISE STOP DELAY
RV201 47k PHASE
L201 47μH
Q202 2SA812 BUFFER
TP201
TP202
TP203
TP204
TP205
Q210 2SA812 BUFFER
Q211-215 2SC1623 SWITCHING
IC202 μPC358G2 CTL PB AMP
IC202
VDD
GND
DM-4 BOARD
L920 35μH
C921 0.022
C920 0.022
M902 DRUM MOTOR
RED D Vs 1
BLU UN REG GND 2
CN203 (BLK)
1 D Vs RED
2 UN REG GND BLU
TAPE END SENSER
D901
D901 GP2S02B
Q901 2SB962 MOTOR DRIVE
RD-8 BOARD
CN207 (WHT)
1 D Vs YEL
2 UN REG WHT
3 D DRIVE B BLU
DRUM PG
DRUM OUT
REC
PB CTL
UN REG
9V
UN REG GND
GND
SRVO
CTIO
CN204 (YEL)
1 CTL
2 GND
S302 C-C DOWN SW
S301 C-IN SW
SW-28 BOARD
S981 WHITE BALANCE
AUTO SET BLK
GND BRN
TO VC-2 CN50 (CAMERA)
S980 STAND BY
STBY SW BRN
STBY LED RED
TALLY LED ORG
DEW LED YEL
CLOG LED WHT
GND BLU
STAND BY D980
REC BATT D981
DEW D982
CAUTION D983
DEW SENS
D980 TL0123 INDICATOR
D982 TLY123 INDICATOR
D981, 983 TLR123 INDICATOR

(JACK), LM-12 (LOADING MOTOR) SCHEMATIC DIAGRAM


J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
Q205 2SA812 BUFFER
Q204 2SC1623
Q203 2SC1623 SWITCHING
D202 E10DS2
Q202 2SA812 BUFFER
TP203
TP204
TP205
CN203 (BLK)
D Vs
UN REG GND
CN207 (WHT)
UN REG
D DRIVE B
CN204 (YEL)
CTL
GND
DRUM PG
DRUM OUT
REC
PB CTL
9V
UN REG GND
SRVO
CTIO
DM-4 BOARD
L920 35µH
C921 0.022
C920 0.022
M902 DRUM MOTOR
D901
D901 GP2S02B
Q901 2SB962 MOTOR DRIVE
RD-8 BOARD
SW-28 BOARD
S981 WHITE BALANCE
AUTO SET
TO VC-2BOARD CN508 (CAMERA)
S980 STAND BY
STBY SW
STBY LED
TALLY LED
DEW LED
CLOG LED
STAND BY
REC BATT
DEW
CAUTION
D980
D981
D982
D983
D980 TLO123 INDICATOR
D982 TLY123 INDICATOR
D981,983 TLR123 INDICATOR
S930 REC STAND BY
TAPE END SENSER
S302 C-C DOWN SW
S301 C-IN SW
S303 LOADING END
DEW SENS
TO AU-3 BOARD CN402
TO VC-2BOARD CN001 (VIDEO)
SS-17 (1/2) BOARD
CN307 (YEL)
REC SW
PB SW
EJ SW
CN303 (WHT)
END SENS
CN301 (WHT)
+9V
AUDIO REC
BIAS
SET UP2
CN302 (BLK)
T FG
FG +B
CN304 (YEL)
PB
CLOG
CN305 (BLK)
L END
CN306 (WHT)
C IN
C IN GND
C-C DWN
CN308 (BLK)
CN309 (WHT)
DEW SENS
C338 33 10V
L302 47µH
TP310
TP311
TP303
TP307
DR301
DC-DC CONVERTER
OUT
IN
Q301,302 2SC1623 AMP
D301 1SS119
Q303 2SA812
Q333 2SC1623 SWITCHING
Q341 2SA812
Q335 2SA812
Q307
Q340 2SA812
D313,314 1S2835
IC301
X301 4MHz
L301 470µH
Q339 2SA8
Q334
Q338
Q336
Q326
Q325
Q324
D306 E10D-S2
D307
IC302 (1/2)
RV301 10k
BATTERY
D316 1S2837
IC302 µPC393G2
IC301 MB88501-167N SYSTEM CONTROL
Q336,338 2SC1623 SWITCHING
Q326 2SA812
Q325 2SA812
D307 1S2835


T
U
V
W
X
Y
Z
A1
B1
C1
D1
E1
F1
G1
H1
I1
1
2
3
4
5
6
7
8
9
10
Q301,302 2SC1623 AMP
D301 1SS119
Q303 2SA812
Q333 2SC1623 SWITCHING
Q341 2SA812
Q335 2SA812
Q307 2SC2785
D302 HZ6C3L
Q310 2SB1040 SWITCHING
D308 E10D-S2
DR301 DC-DC CONVERTER
CN313 (WHT)
1 UN REG BRN
2 SET UP 2 RED
3 PB SW ORG
4 SET UP 1 YEL
5 CLOG LED PNK
6 TALLY LED BLU
7 GND VLT
8 CSWO GRY
9 SERVO WHT
10 CTIO BLK
TO VC-2BOARD CN509 (VIDEO)
Q308 2SC1623 BUFFER
Q309 2SC1623 SWITCHING
Q304 2SA812
Q311 2SA812
Q312 2SC1623 SWITCHING
CN315
1 SW UN REG
2
3 UN REG GND
Q334 2SA812
Q306 2SA812
Q313 2SB962 LOADING MOTOR DRIVE
CN311 (WHT)
1 UNREG RED
2
3 UN REG GND BLK
CN312 (RED)
3 PINCH ON RED
2 UN REG GND YEL
1 PINCH OFF BLU
PM902 PINCH SOLENOID
Q340 2SA812
D313,314 1S2835
D303 E10D-S2
D304 E10D-S2
Q339 2SA812
Q314 2SA812
Q315,318 2SC1623 SWITCHING
D305 E10D-S2
CN310 (WHT)
1 BRAKE OFF BLU
2 UN REG GND YEL
3 BRAKE ON RED
PM901 BRAKE SOLENOID
IC301
X301 4MHz
Q317 2SA812
Q316,319 2SB798 SOLENOID DRIVE
Q322 2SB962 LOADING MOTOR DRIVE
Q320 2SA812
Q321 2SC1623 SWITCHING
D306 E10D-S2
Q323 2SA812
Q342 2SC1623 SWITCHING
Q324 2SA812
D315 RD12E-B3
CN316 (RED)
1 TALLY YEL
2 REMOTE PNK
3 GND BLU
CN314 (RED)
2 LOAD (+) RED
1 LOAD (−) BRN
IC302 (1/2)
BATTERY
JK-2 BOARD
CN903 (BLK)
RED MIC IN 1
WHT AF OUT 2
BLK GND 3
BLK GND 4
BRN AF IN 5
J904 MIC
J902 EARPHONE
J903 REMOTE
R901 47 (1/6W)
TO AU-3 BOARD CN401
CN902 (WHT)
RED UN REG 1
2
BLK UN REG GND 3
YEL TALLY 4
PNK REMOTE 5
BLU GND 6
F901 T4A 250V
J901 DC IN 9.6V
CN901 (RED)
1 BATT ⊕ RED
2
3 BATT ⊖ BLK
BATTERY
LM-12 BOARD
BRN LOAD (−)
RED LOAD (+)
L940 35µH
C940 0.022
C941 0.022
M901 LOADING MOTOR
IC301 terminals: 1 PWCTRL, 2 BIAS, 3 PINCH ON, 4 PINCH OFF, 5 BREAK ON, 6 BREAK OFF, 7 DEW LED, 8 STAND BY LED, 9 TALLY LED, 10 CLOG LED, 11, 12 PB, 13 REC, 14 DRUM OUT, 15 SET UP2, 16 START, 17, 18, 19 +5V, 20, 21 DEW SENS, 22 BAT DWN, 23 REC SW/REMOTE, 24 STAND BY SW, 24 DRUM PG, 25 CLOG DET, 26 TFG, 27 TAPE END, 28 PB SW, 29 AUDIO REC, 30, 31 SET UP1, 32 EJECT SW, 33 C-IN SW, 34 LEND, 35 CSWO, 36 XTAL IN, 37 XTAL OUT, 38 RESET, 39 PB CTL, 40 CTIO, 41, 42 GND, 43, 44 BE/PD, 45 CC DOWN SW, 46 LOAD, 47 UN LOAD, 48
D316 1S2837
IC302 µPC393G2
IC301 MB88501-167N SYSTEM CONTROL
Q336,338 2SC1623 SWITCHING
Q326 2SA812
Q325 2SA812
D307 1S2835
Q343,344 2SC1623
Q329,332 2SB798 LOADING MOTOR DRIVE
Q328,331 2SD999 ZOOM MOTOR DRIV
D309 E10D-S2
D311 E10D-S2
D310 E10D-S2
D312 E10D-S2

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

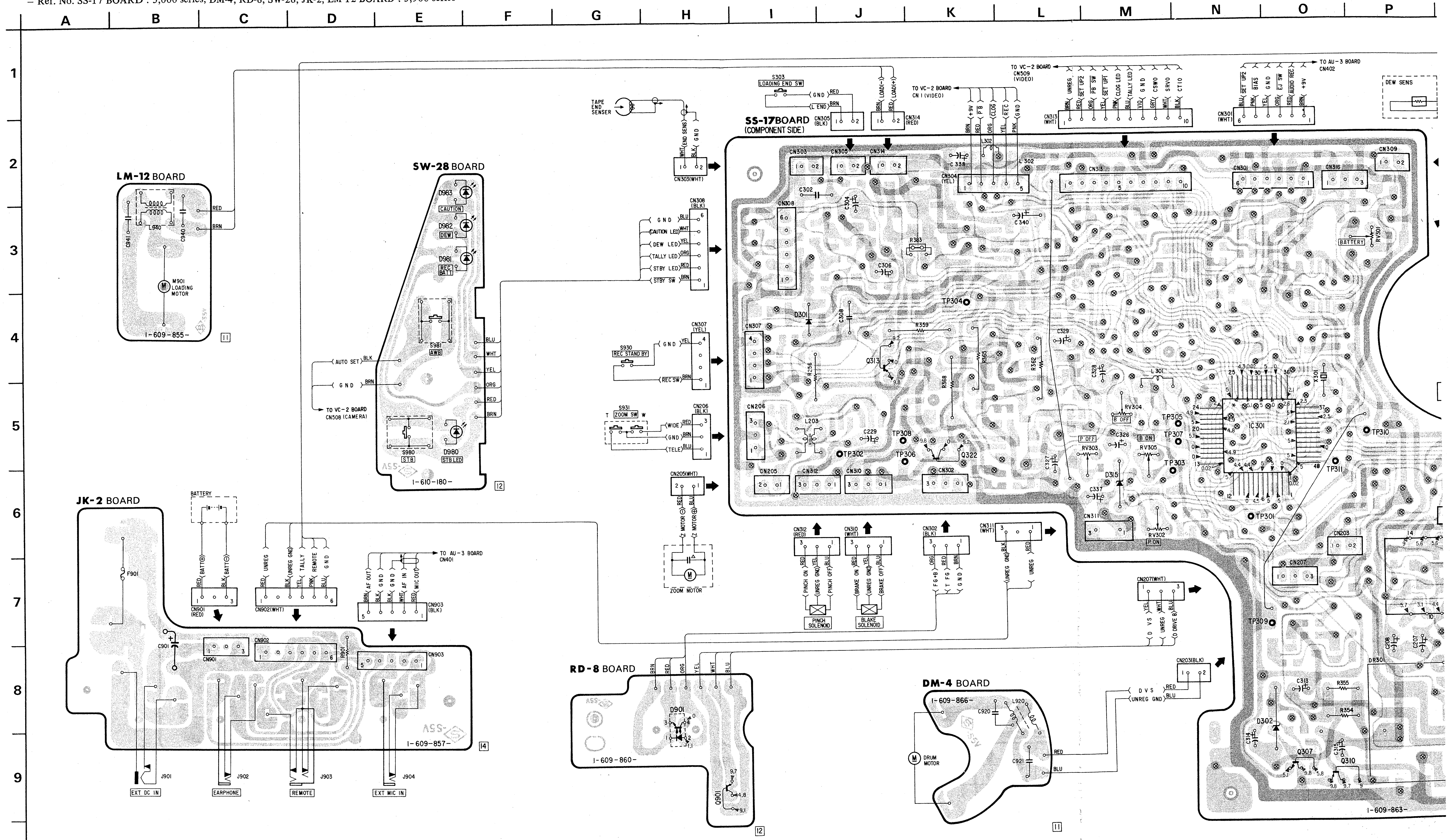
Refer to FUNCTION OF IC301 TERMINALS on page 47.

SERVO, SYSTEM CONTROL

SERVO, SYSTEM CONTROL

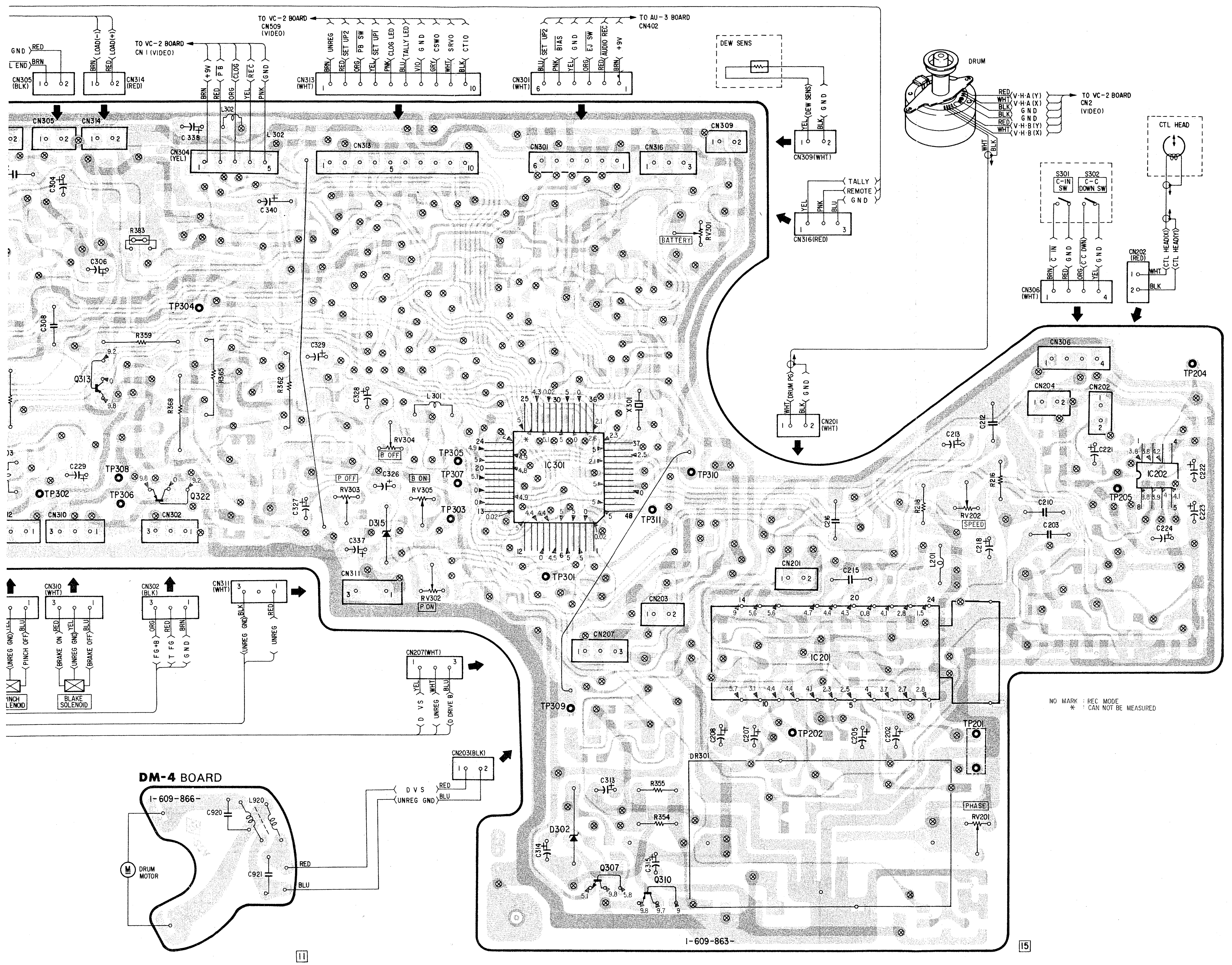
SS-17 (SERVO/SYSTEM CONTROL), DM-4 (DRUM MOTOR), RD-8 (DRUM MOTOR DRIVE/T. FG DET), SW-28 (FUNCTION, SWITCH & IND), JK-2 (JACK), LM-12 (LOADING MOTOR) PRINTED WIRING BOARDS

– Ref. No. SS-17 BOARD : 3,000 series, DM-4, RD-8, SW-28, JK-2, LM-12 BOARD : 3,900 series –


A B C D E F G H I J K L M N O P
1 2 3 4 5 6 7 8 9 10
LM-12 BOARD
L940
C941
C940
M901 LOADING MOTOR
1-609-855-
RED
BRN
SW-28 BOARD
D983
CAUTION
D982
DEW
D981
REC BATT
S981 AWB
S980 STB
D980 STB LED
1-610-180-
AUTO SET
GND
TO VC-2 BOARD CN508 (CAMERA)
BLU
WHT
YEL
ORG
RED
BRN
TAPE END SENSER
CN303(WHT)
WHT (END SENS)
BLK
GND
CN308 (BLK)
GND
CAUTION LED
DEW LED
TALLY LED
STBY LED
STBY SW
CN307 (YEL)
S930 REC STAND BY
REC SW
CN206 (BLK)
S931 ZOOM SW
T W
WIDE
TELE
CN205(WHT)
MOTOR
ZOOM MOTOR
S303 LOADING END SW
L END
CN305 (BLK)
LOAD(–)
LOAD(+)
CN314 (RED)
TO VC-2 BOARD CN 1 (VIDEO)
+9V
PB
CLOG
REC
GND
TO VC-2 BOARD CN509 (VIDEO)
UNREG
SET UP2
PB SW
SET UP1
CLOG LED
TALLY LED
VIO
CSWO
SRVO
CT10
CN313 (WHT)
TO AU-3 BOARD CN402
BIAS
EJ SW
AUDIO REC
CN301 (WHT)
DEW SENS
SS-17 BOARD (COMPONENT SIDE)
CN303 CN305 CN314 CN304 (YEL) CN313 CN301 CN316 CN309
C338 L302 C302 C304 C340 C306 R383 BATTERY RV301
TP304 D301 C308 R359 C329 Q313 R356 R363 R362 R368 L301 C328
IC301 X301
RV304 B OFF TP305 TP307 TP310 TP303 TP311
P OFF RV303 C326 B ON RV305 D315 C327 C337
L203 C229 TP308 TP306 TP302 Q322
CN205 CN312 CN310 CN302 CN311 RV302 P ON TP301
CN203 CN207 TP309 C208 C207 DR301 C313 R355 R354 D302 C314 C315 Q307 Q310
1-609-863-
CN312 (RED) PINCH ON UNREG GND PINCH OFF PINCH SOLENOID
CN310 (WHT) BRAKE ON UNREG GND BRAKE OFF BLAKE SOLENOID
CN302 (BLK) FG+B TFG GND
CN311 (WHT) UNREG GND UNREG
CN207(WHT) D VS UNREG D DRIVE B
CN203(BLK) D VS UNREG GND
JK-2 BOARD
BATTERY
F901
C901
CN901 (RED) BATT(+) BATT(–)
CN902(WHT) UNREG UNREG GND TALLY REMOTE GND
CN903 (BLK) AF OUT GND AF IN MIC OUT
TO AU-3 BOARD CN401
R901
1-609-857-
J901 EXT DC IN
J902 EARPHONE
J903 REMOTE
J904 EXT MIC IN
RD-8 BOARD
D901
Q901
1-609-860-
DM-4 BOARD
1-609-866-
C920 L920 C921
DRUM MOTOR
RED
BLU

JK-2 (JACK), LM-12 (LOADING MOTOR) PRINTED WIRING BOARDS

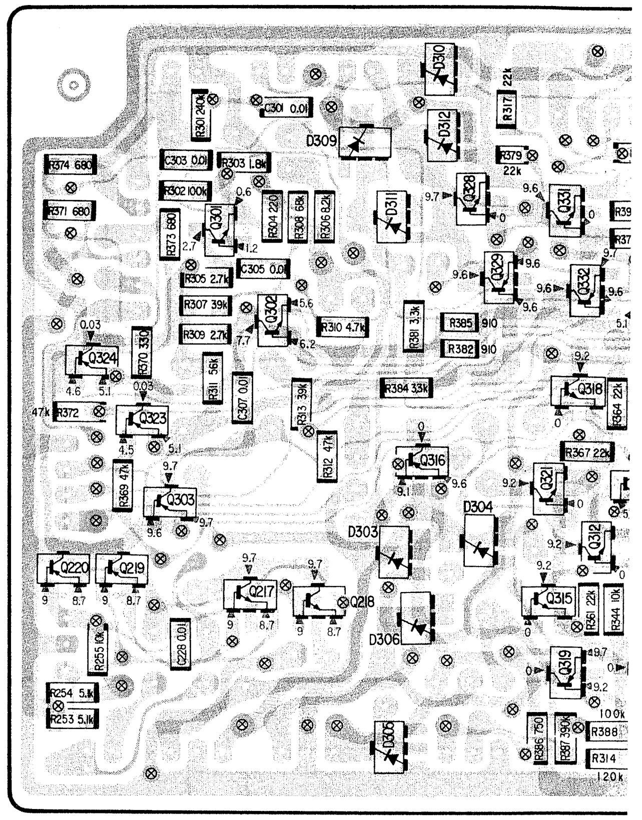
J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y


TO VC-2 BOARD CN509 (VIDEO)
TO AU-3 BOARD CN402
TO VC-2 BOARD CN1 (VIDEO)
CN305 (BLK)
CN314 (RED)
CN304 (YEL)
CN313 (WHT)
CN301 (WHT)
CN309 (WHT)
CN316 (RED)
CN306 (WHT)
CN202 (RED)
CN201 (WHT)
CN310 (WHT)
CN302 (BLK)
CN311 (WHT)
CN207 (WHT)
CN203 (BLK)
CN204
CN316
DEW SENS
DRUM
TO VC-2 BOARD CN2 (VIDEO)
V·H·A (Y)
V·H·A (X)
GND
V·H·B (Y)
V·H·B (X)
CTL HEAD
CTL HEAD (X)
CTL HEAD (Y)
S301 C-IN SW
S302 C-C DOWN SW
TALLY
REMOTE
DRUM PG
UNREG
SET UP2
PB SW
SET UP1
CLOG LED
TALLY LED
VIO
CSWO
SRVO
CTIO
BIAS
EJ SW
AUDIO REC
+9V
PB
CLOG
REC
LOAD(-)
LOAD(+)
PINCH OFF
UNREG GND
BRAKE ON
BRAKE OFF
PINCH SOLENOID
BLAKE SOLENOID
FG+B
TFG
D VS
UNREG GND
D DRIVE B
IC301
IC202
IC201
X301
L301
L302
DR301
BATTERY
RV301
RV302
P.ON
RV303
P OFF
RV304
B OFF
RV305
B ON
RV201
PHASE
RV202
SPEED
TP201
TP202
TP204
TP205
TP301
TP302
TP303
TP304
TP305
TP306
TP307
TP308
TP309
TP310
TP311
Q307
Q310
Q313
Q322
D302
D315
DM-4 BOARD
1-609-866-
L920
C920
C921
DRUM MOTOR
1-609-863-
11
15

NO MARK : REC MODE
* : CAN NOT BE MEASURED

Q , IC	D	ADJ	TP
	310		
	309,312		
341			
338,336			
328,331,335	311,307		
301		RV301	
334			
	314,313		
329 332,325			
326			
302 IC302			
324			
318 340			304
323 317			
	301		
316			
313			
321,320			204
303 339			
312	303,304		
220,219			
306			
217,218		RV304	
315			
311			305
322	306		308,310
314 IC301 IC202			
319			302,307
203	202	RV303,RV202	306 205
		RV305	311
333			303
205			
	305,315		
204			
342 210		RV302	301
211	316		
215,212,213,214			
202,IC201			
			309
309			
304			202,201
201			
	302		
		RV201	
308			
307 343	308		
310			
344			
Q , IC	D	ADJ	TP

SS-17 BOARD(CONDUCTOR SIDE)


D309
D303
D304
D306
D305
Q301
Q302
Q303
Q310
Q311
Q312
Q315
Q316
Q317
Q318
Q319
Q321
Q322
Q323
Q324
Q328
Q329
Q331
Q332
Q217
Q218
Q219
Q220
R374 680
R371 680
R373 680
R370 33k
R369 47k
R372
R311 56k
R307 39k
R309 2.7k
R305 2.7k
R303 1.8k
R302 100k
R304 22k
R306 8.2k
R308 68k
R310 4.7k
R313 33k
R312 47k
R381 3.3k
R385 910
R382 910
R384 33k
R379 22k
R317 22k
R367 22k
R364 22k
R361 22k
R344 10k
R386 750
R387 390
R388
R314
R254 5.1k
R253 5.1k
R255 10k
R228 10k
R301 240k
C301 0.01
C303 0.01
C305 0.01
C307 0.01
120k
100k

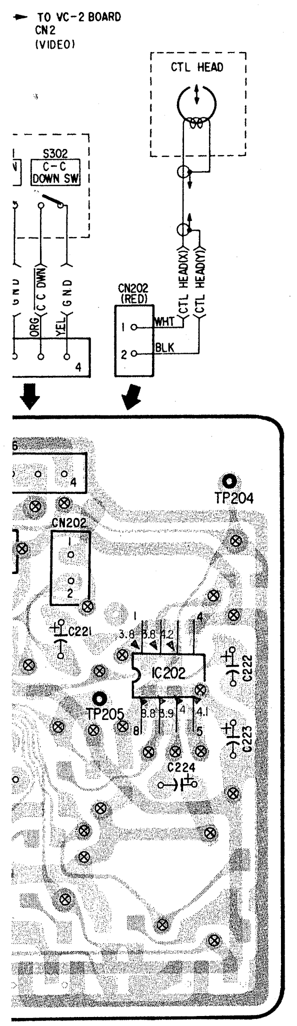
T U V W X Y Z A1 B1 C1 D1 E1 F1 G1 H1 I

Caution:

Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) Parts on the parts face side seen from the pattern face are indicated.

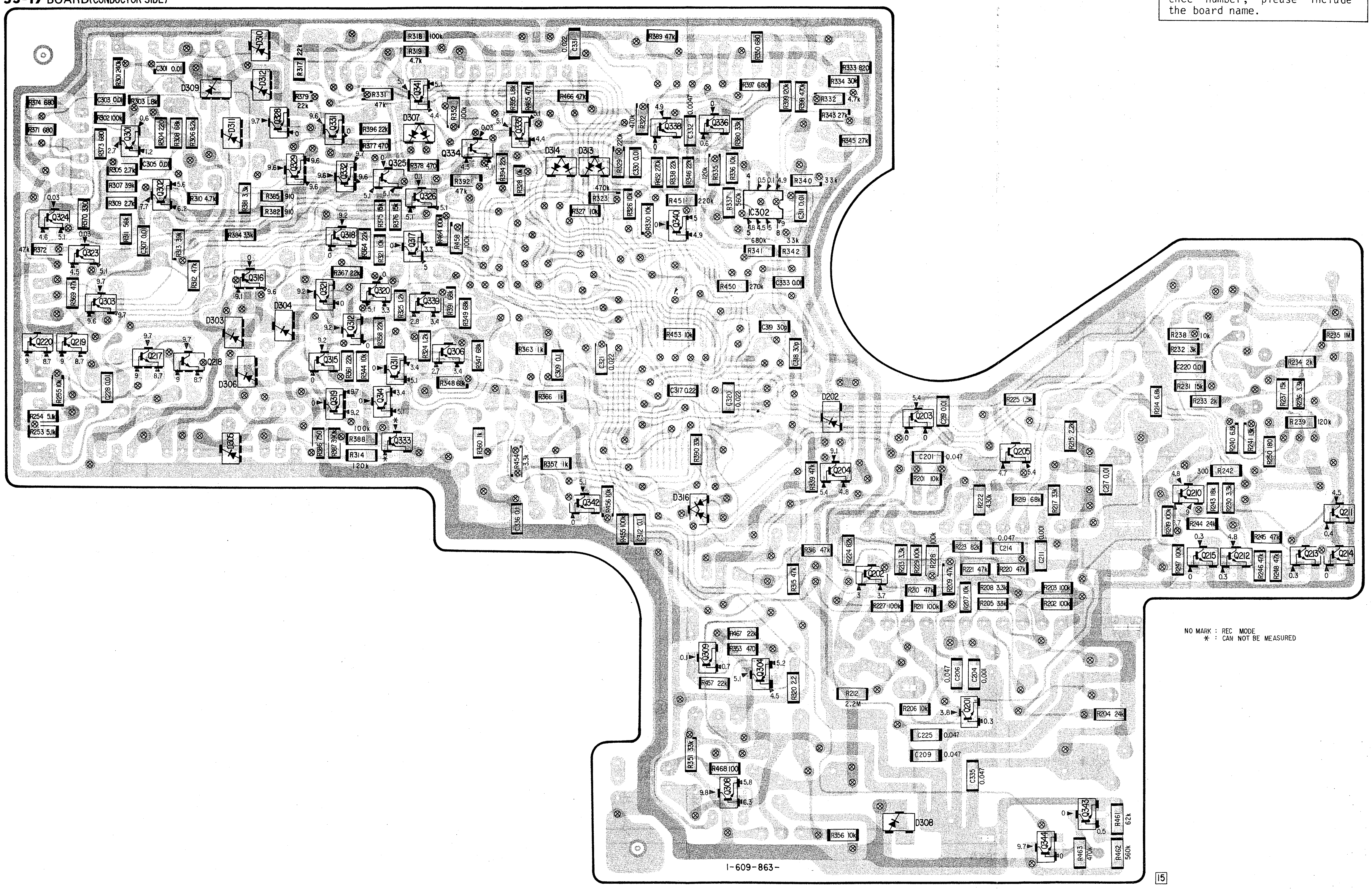
When indicating parts by reference number, please include the board name.


TO VC-2 BOARD
CN2
(VIDEO)
CTL HEAD
S302
C-C
DOWN SW
GND
C C DWN
ORG
YEL
GND
4
CN202
(RED)
1
2
WHT
BLK
CTL HEAD(X)
CTL HEAD(Y)
TP204
CN202
C221
IC202
C222
C223
TP205
C224

ARK : REC MODE
* : CAN NOT BE MEASURED

Q , IC	D	ADJ	TP
	310		
	309,312		
341			
338,336 328,331,335 301	311,307	RV301	
334			
	314,313		
329 332,325			
326			
302 IC302			
324			
318 340			304
323 317			
	301		
316			
313			
321,320			204
303 339			
312	303,304		
220,219			
306			
217,218		RV304	
315			
311			305
322	306		308,310
314 IC301 IC202			
319			302,307
203	202	RV303,RV202 RV305	306 205 311
333			303
205			
	305,315		
204			
210			
342		RV302	301
211	316		
215,212,213,214			
202,IC201			
			309
309			
304			202,201
201			
	302		
		RV201	
308			
307 343	308		
310			
344			
Q , IC	D	ADJ	TP

SS-17 BOARD(CONDUCTOR SIDE)

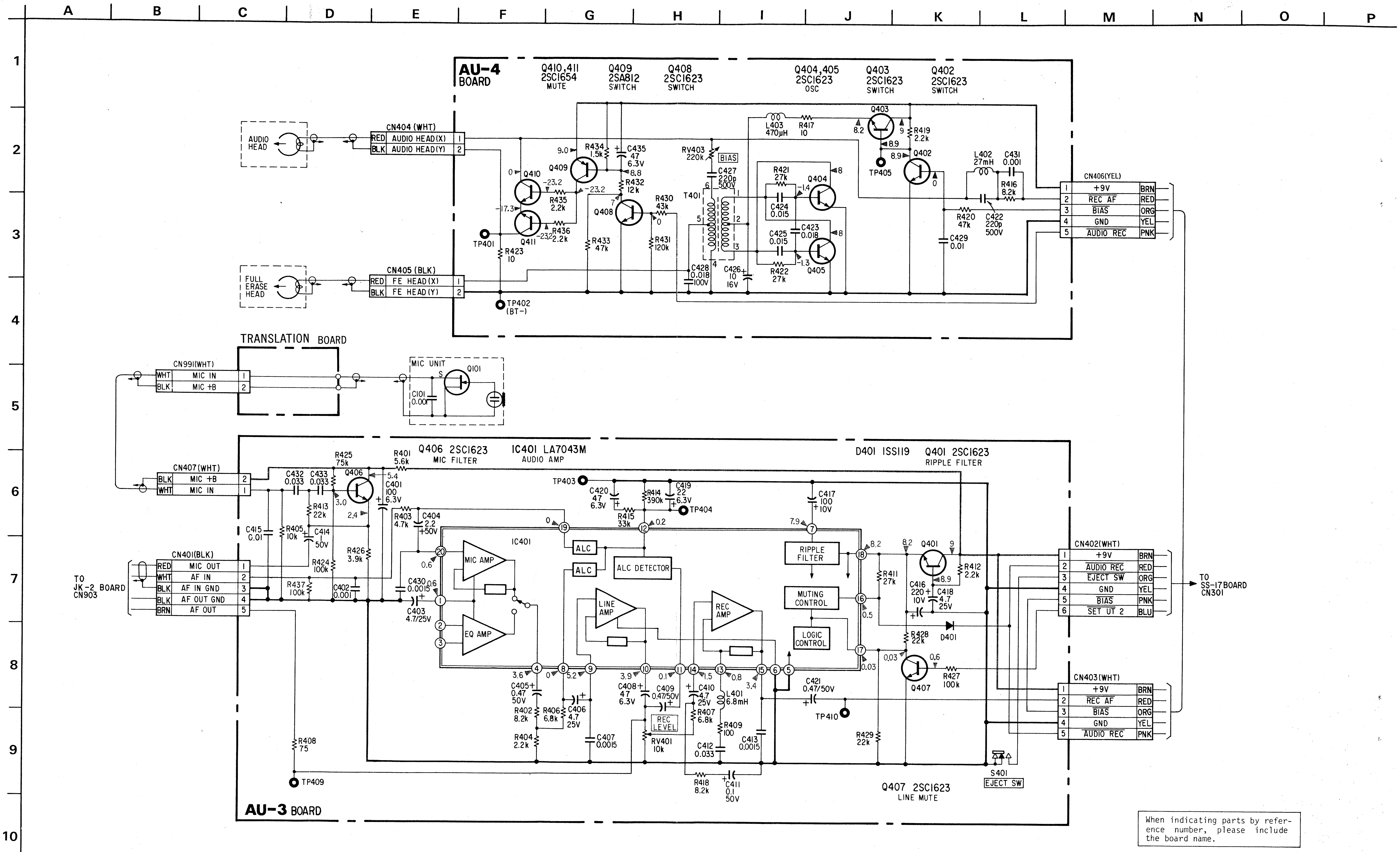

Q330
Q312
D309
R318 100k
R319 4.7k
Q341
R331 47k
D307
Q334
Q335
R389 47k
Q338
Q336
R333 820
R334 30k
R332 4.7k
R343 27k
R345 27k
R374 680
R371 680
C301 0.01
C303 0.01
R303 1.8k
R302 100k
Q301
Q311
Q328
Q331
Q329
Q332
Q325
R396 22k
R377 470
R378 470
R379 22k
D314
D313
R466 47k
R340 3.3k
IC302
Q326
R305 2.7k
C305 0.01
Q302
R307 39k
R309 2.7k
R310 4.7k
R385 910
R382 910
Q324
R372
Q323
Q318
R384 3.3k
Q316
Q317
R367 22k
R392 47k
R323
R327 10k
R451 220k
Q340
R341
R342
680k
3.3k
R450 270k
C333 0.01
Q303
D303
D304
Q320
Q339
Q220
Q219
Q217
Q218
D306
Q315
Q313
Q311
Q306
R363 1k
R453 10k
C39 30p
R348 68k
R366 1k
C317 0.22
D202
Q203
R254 5.1k
R253 5.1k
Q319
Q314
R388 100k
Q333
R314 120k
Q305
R357 1k
Q342
D316
C201 0.047
R201 10k
Q205
Q204
R225 1.5k
R229 68k
R238 10k
R232 3k
C220 0.01
R231 15k
R233 2k
R235 1M
R234 2k
R239 120k
R242
Q210
Q211
R244 24k
R245 47k
Q215
Q212
Q213
Q214
R316 47k
Q202
R223 82k
C214 0.047
R221 47k
R220 47k
R203 100k
R202 100k
R210 47k
R205 3.3k
R211 100k
R227 100k
R467 22k
R353 470
Q309
Q304
R457 22k
R212 2.2M
R206 10k
Q201
R204 24k
C225 0.047
C209 0.047
C335 0.047
R359 33k
R468 100
Q308
D308
R356 10k
Q343
Q344
R461 62k
R462 560k
R463 470k
1-609-863-
15

NO MARK : REC MODE
* : CAN NOT BE MEASURED

1 2 3 4 5 6 7 8 9 10

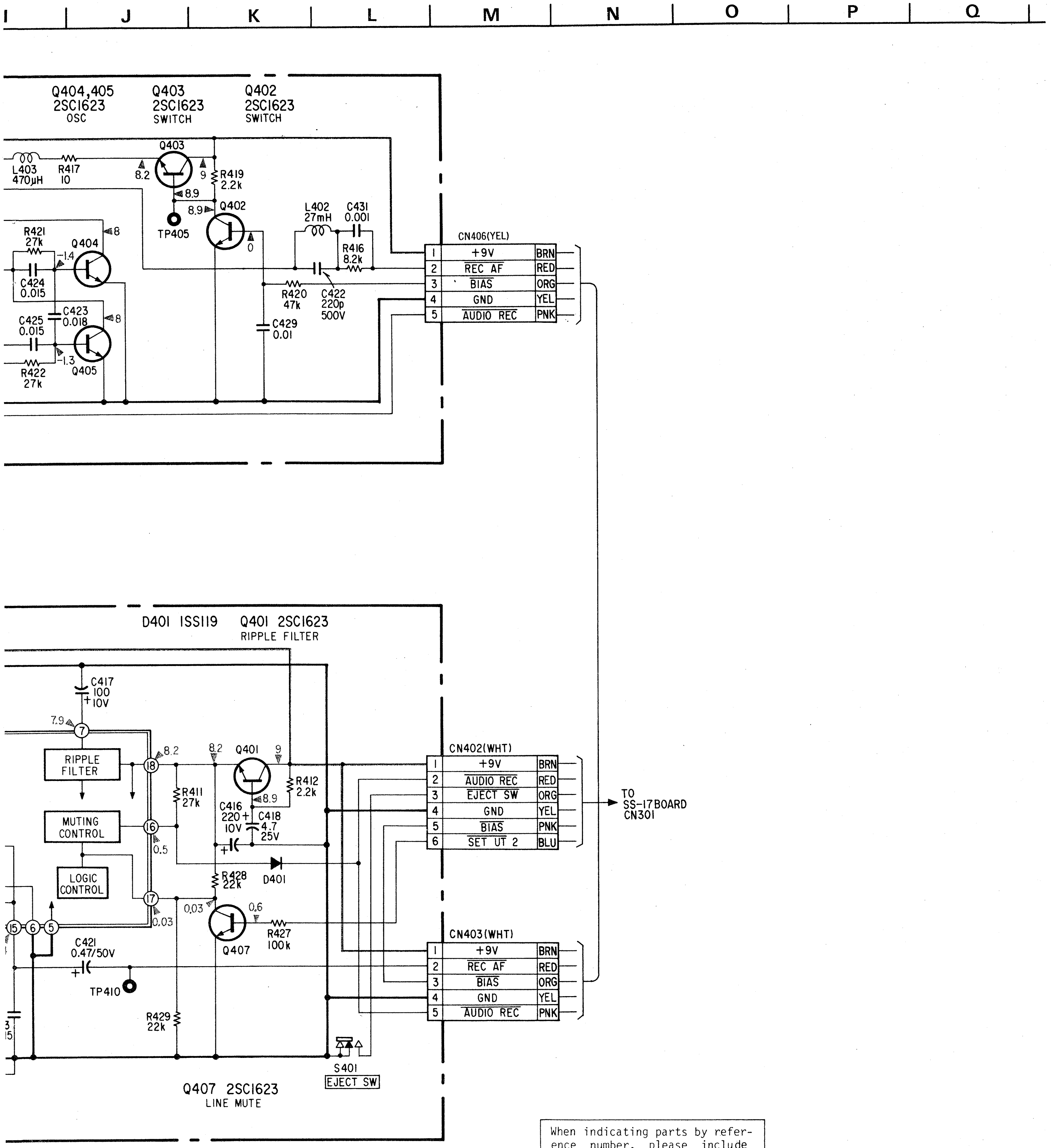
AU-3 (AUDIO SIGNAL RECORD/MONITOR PROCESS), AU-4 (AUDIO SIGNAL RECORD PROCESS), TRANSLATION (MIC IN) SCHEMATIC DIAGRAM

– Ref. No. AU-3, AU-4 BOARD : 4,400 series, TRANSLATION BOARD : 5,000 series –


A B C D E F G H I J K L M N O P
1 2 3 4 5 6 7 8 9 10
AU-4 BOARD
Q410,411 2SC1654 MUTE
Q409 2SA812 SWITCH
Q408 2SC1623 SWITCH
Q404,405 2SC1623 OSC
Q403 2SC1623 SWITCH
Q402 2SC1623 SWITCH
AUDIO HEAD
CN404 (WHT)
RED AUDIO HEAD(X) 1
BLK AUDIO HEAD(Y) 2
FULL ERASE HEAD
CN405 (BLK)
RED FE HEAD(X) 1
BLK FE HEAD(Y) 2
TP401
TP402 (BT-)
TP405
R434 1.5k
C435 47 6.3V
R432 12k
R435 2.2k
R436 2.2k
R433 47k
R423 10
R430 43k
R431 120k
RV403 220k
BIAS
C427 220p 500V
T401
C428 0.018 100V
C426 10 16V
L403 470μH
R417 10
R421 27k
C424 0.015
C423 0.018
C425 0.015
R422 27k
R419 2.2k
L402 27mH
C431 0.001
R416 8.2k
R420 47k
C422 220p 500V
C429 0.01
CN406(YEL)
1 +9V BRN
2 REC AF RED
3 BIAS ORG
4 GND YEL
5 AUDIO REC PNK
TRANSLATION BOARD
CN991(WHT)
WHT MIC IN 1
BLK MIC +B 2
MIC UNIT
Q101
C101 0.001
CN407(WHT)
BLK MIC +B 2
WHT MIC IN 1
CN401(BLK)
RED MIC OUT 1
WHT AF IN 2
BLK AF IN GND 3
BLK AF OUT GND 4
BRN AF OUT 5
TO JK-2 BOARD CN903
Q406 2SC1623 MIC FILTER
IC401 LA7043M AUDIO AMP
D401 1SS119
Q401 2SC1623 RIPPLE FILTER
R425 75k
R401 5.6k
C432 0.033
C433 0.033
C401 100 6.3V
R413 22k
R403 4.7k
C404 2.2 50V
C415 0.01
R405 10k
C414 1 50V
R426 3.9k
R424 100k
R437 100k
C402 0.001
C430 0.0015
C403 4.7/25V
TP403
C420 47 6.3V
R414 390k
C419 22 6.3V
R415 33k
TP404
C417 100 10V
IC401
MIC AMP
EQ AMP
ALC
ALC
ALC DETECTOR
LINE AMP
REC AMP
RIPPLE FILTER
MUTING CONTROL
LOGIC CONTROL
R411 27k
R412 2.2k
C416 220 10V
C418 4.7 25V
R428 22k
D401
Q407
R427 100k
C405 0.47 50V
R402 8.2k
R406 6.8k
C406 4.7 25V
R404 2.2k
C407 0.0015
C408 47 6.3V
C409 0.47/50V
REC LEVEL
RV401 10k
C410 4.7 25V
R407 6.8k
L401 6.8mH
R409 100
C412 0.033
C413 0.0015
C421 0.47/50V
TP410
R418 8.2k
C411 0.1 50V
R429 22k
R408 75
TP409
Q407 2SC1623 LINE MUTE
AU-3 BOARD
CN402(WHT)
1 +9V BRN
2 AUDIO REC RED
3 EJECT SW ORG
4 GND YEL
5 BIAS PNK
6 SET UT 2 BLU
TO SS-17 BOARD CN301
CN403(WHT)
1 +9V BRN
2 REC AF RED
3 BIAS ORG
4 GND YEL
5 AUDIO REC PNK
S401 EJECT SW

When indicating parts by reference number, please include the board name.

IATIC DIAGRAM


I
J
K
L
M
N
O
P
Q
Q404,405
2SC1623
OSC
Q403
2SC1623
SWITCH
Q402
2SC1623
SWITCH
L403 470μH
R417 10
R419 2.2k
TP405
L402 27mH
C431 0.001
R416 8.2k
R421 27k
Q404
C424 0.015
C425 0.015
C423 0.018
Q405
R422 27k
R420 47k
C422 220p 500V
C429 0.01
CN406(YEL)
1 +9V BRN
2 REC AF RED
3 BIAS ORG
4 GND YEL
5 AUDIO REC PNK
D401 1SS119
Q401 2SC1623
RIPPLE FILTER
C417 100 10V
RIPPLE FILTER
MUTING CONTROL
LOGIC CONTROL
R411 27k
Q401
R412 2.2k
C416 220 10V
C418 4.7 25V
R428 22k
D401
Q407
R427 100k
C421 0.47/50V
TP410
R429 22k
CN402(WHT)
1 +9V BRN
2 AUDIO REC RED
3 EJECT SW ORG
4 GND YEL
5 BIAS PNK
6 SET UT 2 BLU
TO SS-17BOARD CN301
CN403(WHT)
1 +9V BRN
2 REC AF RED
3 BIAS ORG
4 GND YEL
5 AUDIO REC PNK
S401
EJECT SW
Q407 2SC1623
LINE MUTE

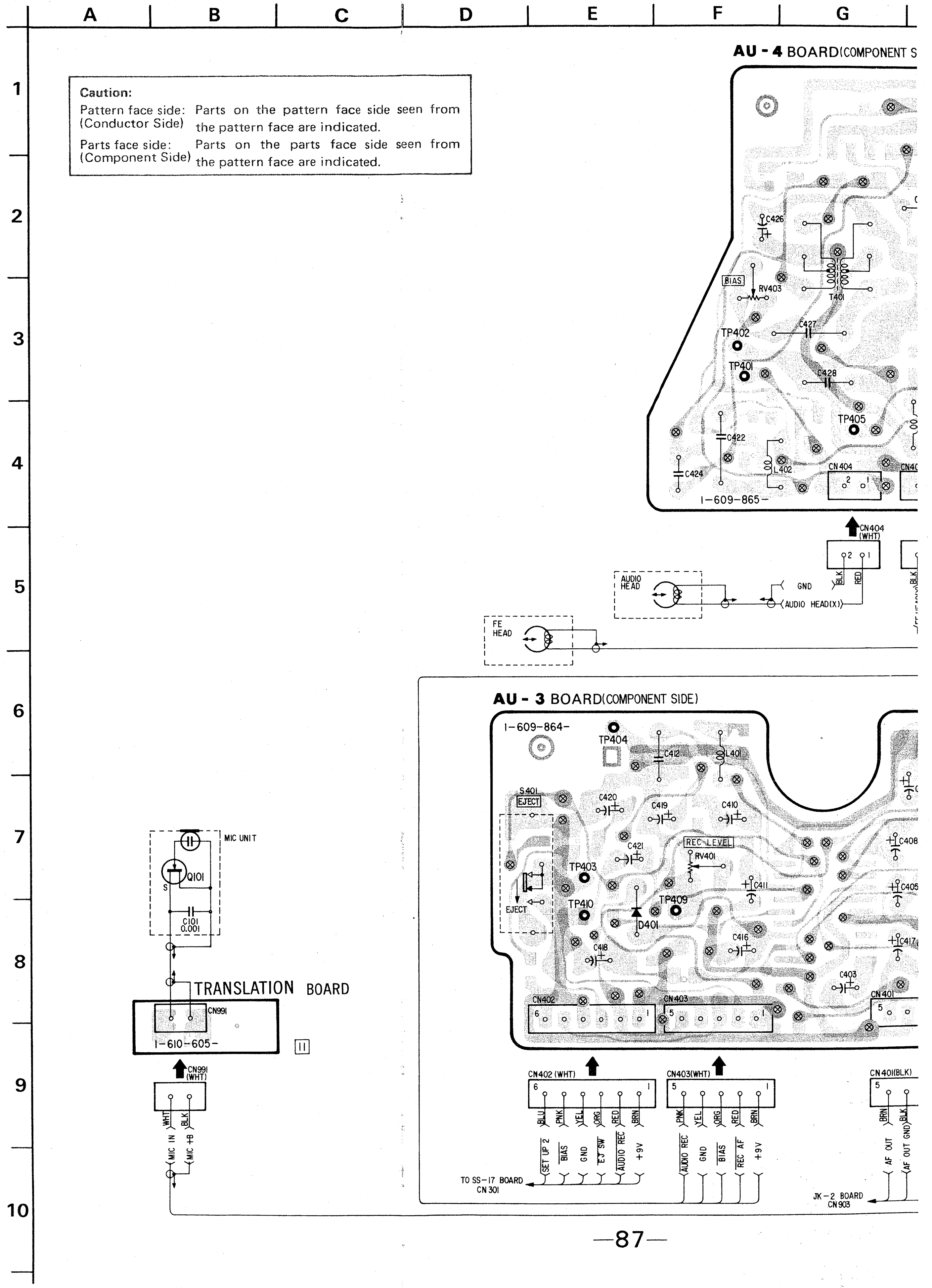
When indicating parts by reference number, please include the board name.

AU-3 (AUDIO SIGNAL RECORD/MONITOR PROCESS), AU-4 (AUDIO SIGNAL RECORD PROCESS), TRANSLATI

– Ref. No. AU-3, AU-4 BOARD : 4,400 series, TRANSLATION BOARD : 5,000 series –

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the pattern face are indicated.

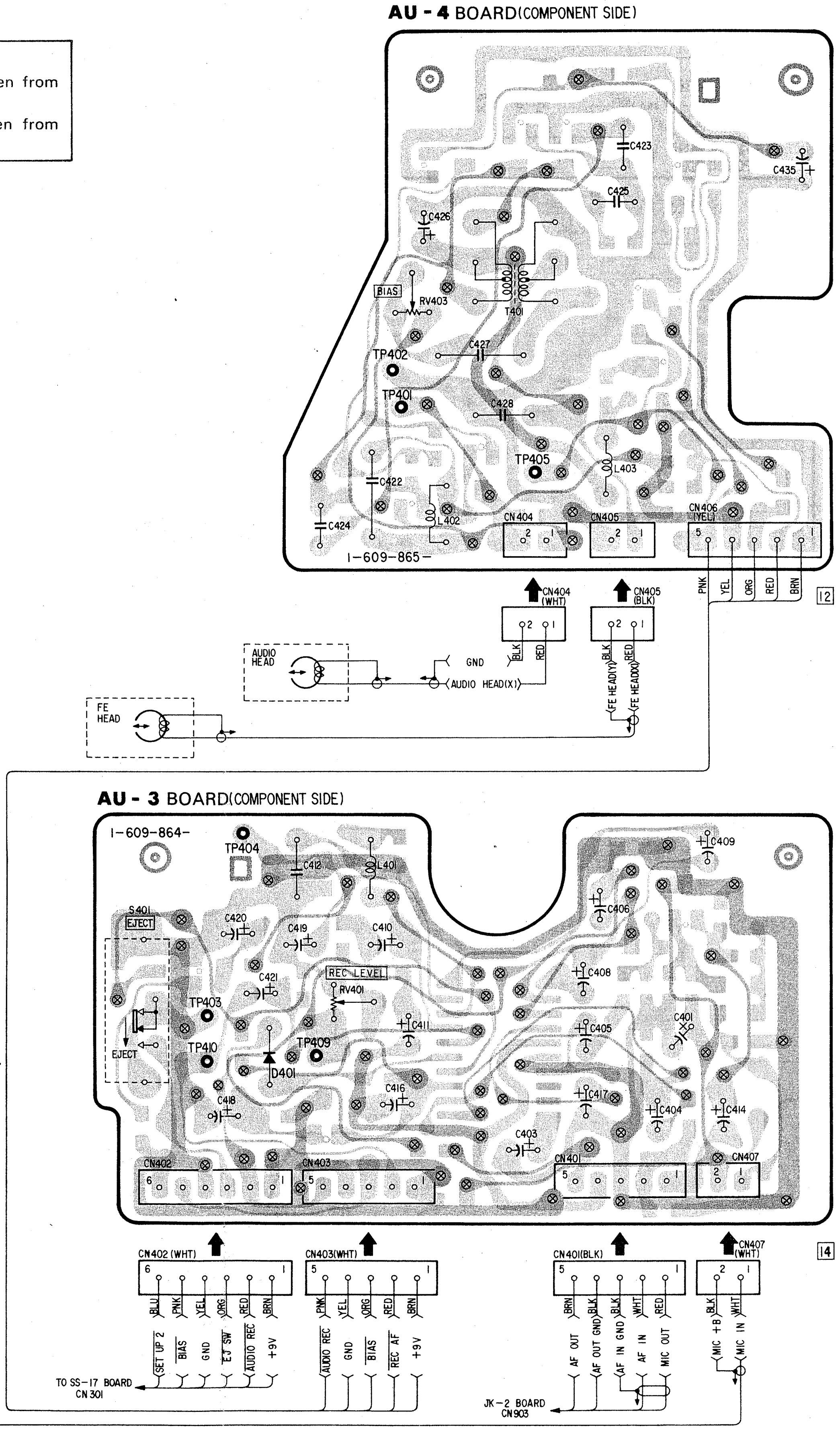

A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
10
AU - 4 BOARD(COMPONENT S
C426
BIAS
RV403
T401
TP402
C427
TP401
C428
TP405
C422
C424
L402
CN404
1-609-865-
CN404 (WHT)
AUDIO HEAD
GND
BLK
RED
AUDIO HEAD(X)
FE HEAD
AU - 3 BOARD(COMPONENT SIDE)
1-609-864-
TP404
C412
L401
S401 EJECT
C420
C419
C410
C408
C421
REC LEVEL
RV401
TP403
C411
C405
TP410
TP409
D401
EJECT
C416
C418
C417
C403
CN402
CN403
CN401
MIC UNIT
Q101
C101 0.001
TRANSLATION BOARD
CN991
1-610-605-
CN991 (WHT)
WHT
BLK
MIC IN
MIC +B
CN402 (WHT)
BLU PNK YEL ORG RED BRN
SET UP 2
BIAS
GND
EJ SW
AUDIO REC
+9V
TO SS-17 BOARD CN301
CN403(WHT)
PNK YEL ORG RED BRN
AUDIO REC
GND
BIAS
REC AF
+9V
CN401(BLK)
BRN BLK
AF OUT
AF OUT GND
JK-2 BOARD CN903

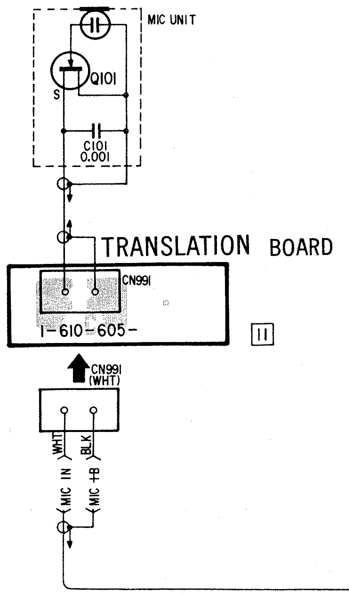
UDIO SIGNAL RECORD/MONITOR PROCESS), AU-4 (AUDIO SIGNAL RECORD PROCESS), TRANSLATION (MIC IN) PRINTED WIRING BOARDS

. AU-3, AU-4 BOARD : 4,400 series, TRANSLATION BOARD : 5,000 series –

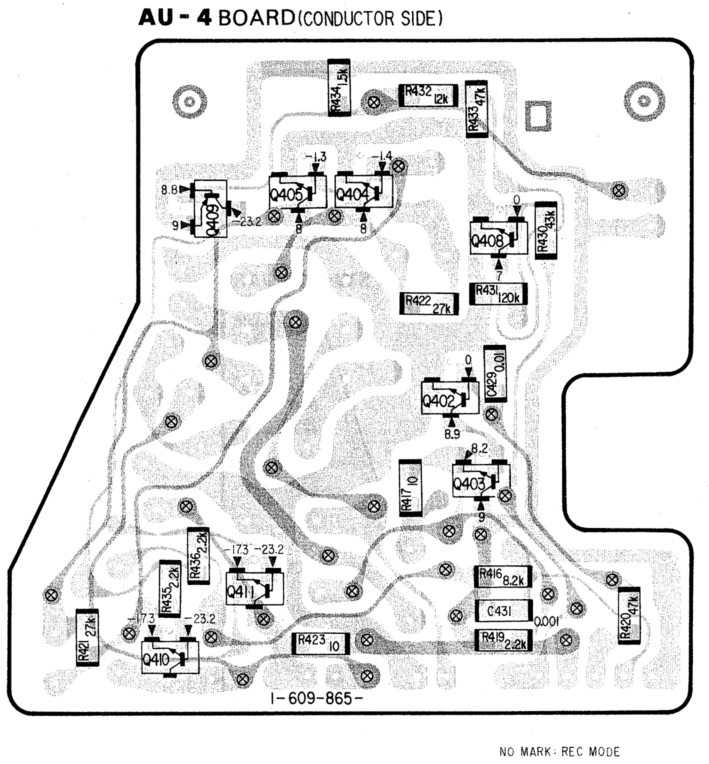
aution:

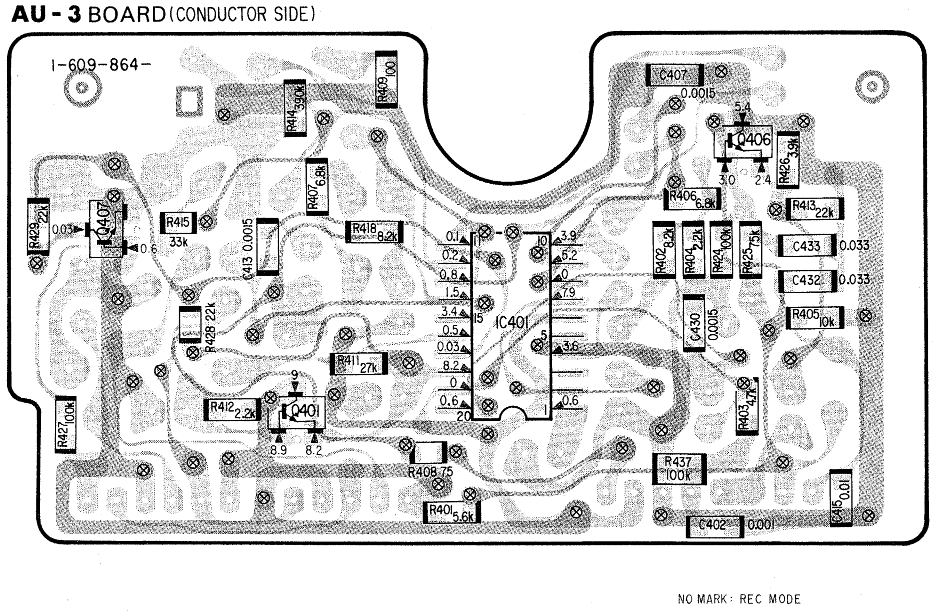
attern face side: Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
arts face side: Component Side)	Parts on the parts face side seen from the pattern face are indicated.


AU - 4 BOARD(COMPONENT SIDE)
C423
C435
C425
C426
BIAS
RV403
T401
C427
TP402
TP401
C428
TP405
L403
C422
C424
L402
CN404
CN405
CN406 (YEL)
1-609-865-
PNK
YEL
ORG
RED
BRN
12
CN404 (WHT)
CN405 (BLK)
BLK
RED
AUDIO HEAD
GND
AUDIO HEAD(X1)
FE HEAD(Y)
FE HEAD(X)
FE HEAD
AU - 3 BOARD(COMPONENT SIDE)
1-609-864-
TP404
C412
L401
C409
S401
EJECT
C420
C419
C410
C406
C421
REC LEVEL
RV401
C408
TP403
C411
C405
C401
TP410
TP409
D401
C416
C417
C404
C414
C418
C403
CN402
CN403
CN401
CN407
14
CN402 (WHT)
BLU
PNK
YEL
ORG
GRY
BRN
SET UP 2
BIAS
GND
EJ SW
AUDIO REC
+9V
TO SS-17 BOARD CN301
CN403(WHT)
PNK
YEL
ORG
RED
BRN
AUDIO REC
GND
BIAS
REC AF
+9V
CN401(BLK)
BRN
BLK
WHT
RED
AF OUT
AF OUT GND
AF IN GND
AF IN
MIC OUT
JK-2 BOARD CN903
CN407 (WHT)
BLK
WHT
MIC +B
MIC IN


MIC UNIT
Q101
C101 0.001
TRANSLATION BOARD
CN991
1-610-605-
11
CN991 (WHT)
WHT
BLK
MIC IN
MIC +B

Q,IC	D	ADJ	TP
405,404 409			
408			
		RV403	
402			
			402
403			401
411			405
410			
			404
406			
407			
		RV401	
			403
IC401	401		410 409
401			
Q,IC	D	ADJ	TP


AU - 4 BOARD(CONDUCTOR SIDE)
R434 15k
R432 12k
R433 47k
Q405
Q404
Q409
Q408
R430 33k
R422 27k
R431 120k
Q402
C429 0.01
Q403
R417 10
R436 2.2k
R435 12k
Q411
R416 8.2k
C431 0.001
Q410
R423 10
R419 2.2k
R420 47k
R421 27k
1-609-865-
12
NO MARK : REC MODE

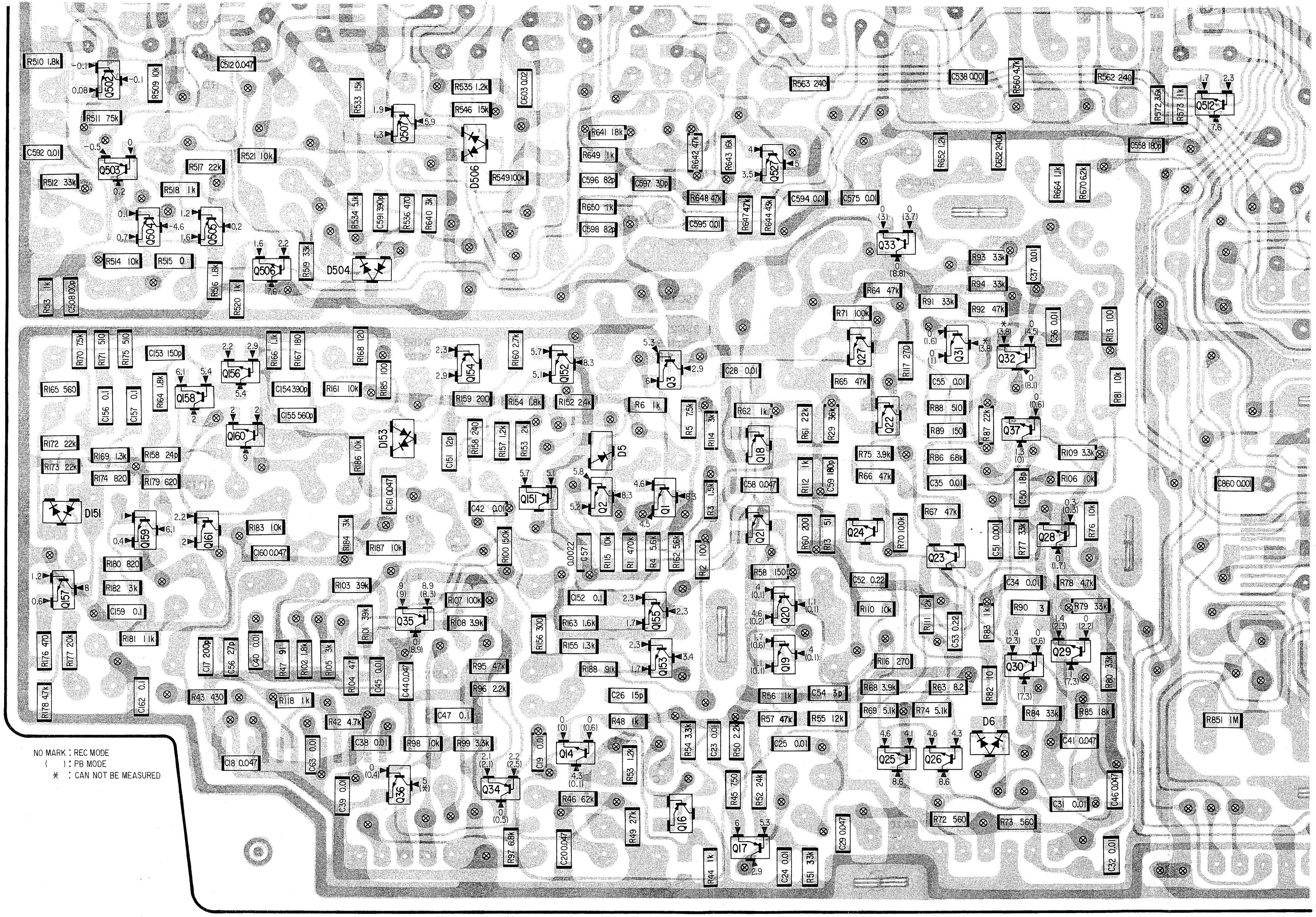

AU - 3 BOARD(CONDUCTOR SIDE)
1-609-864-
R414 390k
R409 10k
C407 0.0015
Q406
R426 33k
R429 22k
Q407
R415 33k
C413 0.0015
R407 6.8k
R418 8.2k
R406 6.8k
R413 22k
R412 8.2k
R404 2.2k
R424 100k
R425 75k
C433 0.033
C432 0.033
R405 10k
IC401
C430 0.0015
R428 22k
R411 27k
R412 2.2k
Q401
R427 100k
R408 75
R437 100k
R403 47k
R401 5.6k
C402 0.001
C415 0.01
14
NO MARK : REC MODE

When indicating parts by reference number, please include the board name.

4-3. ENLARGED VC-2 BOARD (PATTERN FACE SIDE)

Caution:
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.

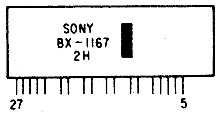
When indicating parts by reference number, please include the board name.


R510 1.8k
Q502
R509 10k
R511 75k
C592 0.01
Q503
R512 33k
R517 22k
R518 1k
R521 10k
Q504
Q505
R514 10k
R515 0
R516 1.8k
Q506
R519 33k
R520 1k
R613 1k
C508 100p
C512 0.047
R533 15k
Q507
R534 5.1k
C591 390p
R536 470
R640 3k
D504
R535 1.2k
R546 15k
C603 0.02
D506
R549 100k
R641 18k
R649 1k
C596 82p
R650 1k
C598 82p
C597 30p
R642 47k
R643 16k
Q527
R648 47k
C595 0.01
R647 47k
R644 43k
R563 240
C594 0.01
C575 0.01
Q33
C538 0.001
R560 4.7k
R652 1.2k
C652 240p
R562 240
R572 3.6k
R573 1.1k
Q512
C558 180p
R664 1.1k
R670 6.2k
R93 33k
R94 33k
C37 0.01
R64 47k
R71 100k
R91 33k
R92 47k
Q27
Q31
Q32
C56 0.01
R113 100
R81 10k
R65 47k
R117 270
C55 0.01
Q22
R88 510
R89 150
R87 22k
Q37
R109 3.3k
R75 3.9k
R66 47k
R86 68k
C35 0.01
C50 18p
R106 10k
C860 0.001
R67 47k
Q24
R70 100k
Q23
C51 0.001
R77 33k
Q28
R76 10k
C34 0.01
R78 4.7k
R90 3
R79 33k
Q29
Q30
R80 33k
R82 10
R84 33k
R85 18k
D6
C41 0.047
R851 1M
Q25
Q26
C46 0.047
C31 0.01
R72 560
R73 560
C32 0.01
R170 7.5k
R171 510
R175 510
C153 150p
Q156
R166 1.1k
R167 180
R168 120
R165 560
C156 0.1
C157 0.1
R164 1.8k
Q158
C154 390p
R161 10k
R185 100
C155 560p
Q160
D153
R172 22k
R173 22k
R169 1.3k
R158 24p
R174 820
R179 620
R186 10k
C161 0.047
C151 12p
Q154
R159 200
R160 2.7k
Q152
R154 1.8k
R152 2.4k
R156 240
R157 1.2k
R153 2k
D151
Q159
Q161
R183 10k
C160 0.047
R184 3k
R187 10k
C42 0.01
R100 150k
Q151
Q157
R180 820
R182 3k
C159 0.1
R181 1.1k
R176 470
R177 20k
R178 4.7k
C162 0.1
C17 200p
C56 27p
C40 0.01
R47 91
R102 1.8k
R105 3k
R104 47
C45 0.01
C44 0.047
R103 39k
R101 39k
Q35
R107 100k
R108 3.9k
R95 47k
R96 2.2k
R43 430
R118 1k
R42 4.7k
C47 0.1
C38 0.01
R98 10k
R99 3.3k
C18 0.047
C63 0.01
C39 0.01
Q36
Q34
R97 6.8k
C19 0.01
Q14
R46 62k
C200 0.047
R156 300
C152 0.1
R163 1.6k
R155 1.3k
Q155
Q153
R188 91k
C26 15p
R48 1k
R53 1.2k
R49 27k
Q16
R44 1k
Q3
R6 1k
R5 7.5k
R114 3k
D5
Q2
Q1
R3 1.5k
C57 0.0022
R115 10k
R1 470k
R4 5.6k
R162 5.6k
R2 100
C28 0.01
R62 1k
Q18
C58 0.047
Q21
R61 22k
R29 36k
R112 1k
C59 180p
R60 200
R13 51
R58 150
Q20
Q19
R111 12k
C52 0.22
R110 10k
C53 0.22
R83 1k
R116 270
R68 3.9k
R63 8.2
R56 1k
C54 3p
R57 47k
R55 12k
R69 5.1k
R74 5.1k
R54 3.3k
C23 0.01
R50 2.2k
C25 0.01
R45 750
R52 24k
Q17
C29 0.047
C24 0.01
R51 33k

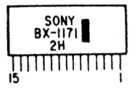
NO MARK : REC MODE
( ) : PB MODE
* : CAN NOT BE MEASURED

4-4. SEMICONDUCTORS

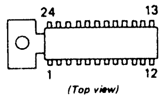
BX-1167A


SONY
BX-1167
2H
27
5

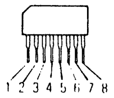
BX-1171


SONY
BX-1171
2H
15
1

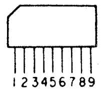
CX186


24
13
1
12
(Top view)

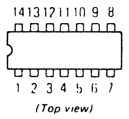
CX816



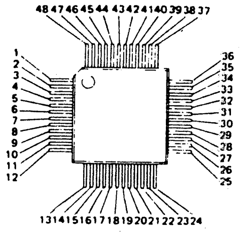
CX10018



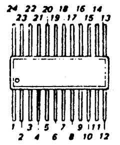
CX896


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

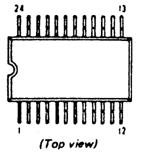
CX7986
MB88501-167N


48 47 46 45 44 43 42 41 40 39 38 37
1 2 3 4 5 6 7 8 9 10 11 12
36 35 34 33 32 31 30 29 28 27 26 25
13 14 15 16 17 18 19 20 21 22 23 24

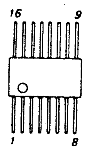
CX10041


24 22 20 18 16 14
23 21 19 17 15 13
1 3 5 7 9 11
2 4 6 8 10 12

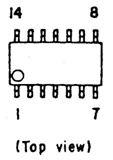
CX20004


24
13
1
12
(Top view)

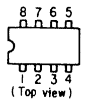
CX22017



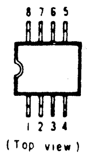
CX20059
CX20065


14
8
1
7
(Top view)

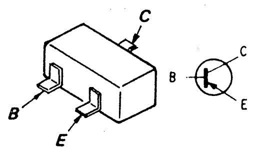
µPC4558G2


8 7 6 5
1 2 3 4
(Top view)

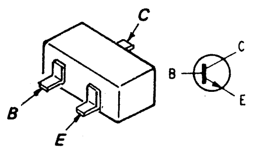
µPC358G
µPC358G2
µPC393G2


8 7 6 5
1 2 3 4
(Top view)

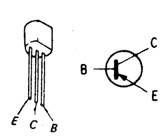
2SA812
2SA1122
2SA1226-E4



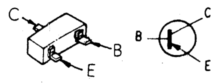
2SC1623
2SC2223-F14
2SC2712



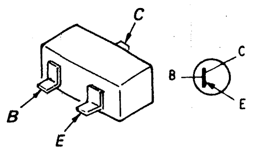
2SA1091



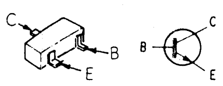
2SA1162
2SA1179



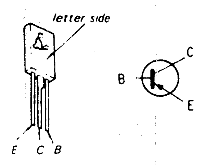
2SA1163



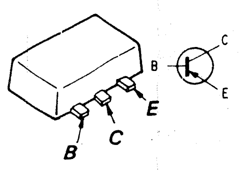
2SC1009A
2SC1163
2SC2713
2SC1654



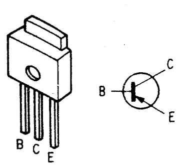
2SB772


letter side
E C B
B
C
E

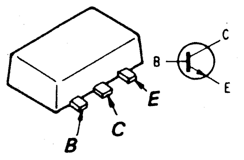
2SB798



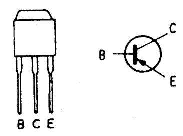
2SB1040



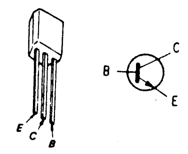
2SD999



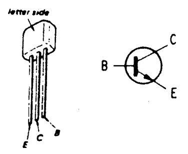
2SB962



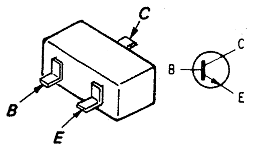
2SC2458
2SC2603



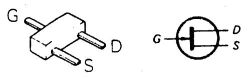
2SC2785


letter side
E C B
B
C
E

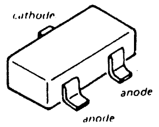
2SC2812



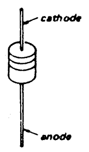
2SK300
2SK209Y



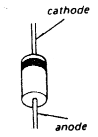
1S2835
1S2837
1SS123
MA151WA
RD5.6M-B1
RD7.5M-T2B1


cathode
anode
anode

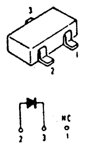
1SS119
1SS148


cathode
anode

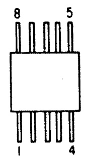
1SS133
HZ6C2L
HZ6C3L
RD12E-B2
RD12E-B3


cathode
anode

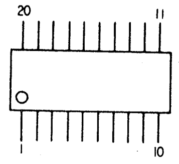
E10DS2



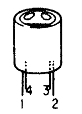
NJM4556M-A



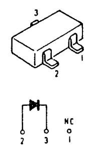
LA7043M



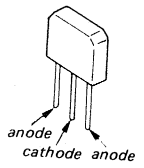
GP-2S02B



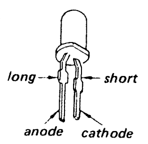
RD6.8M-B3



1T25

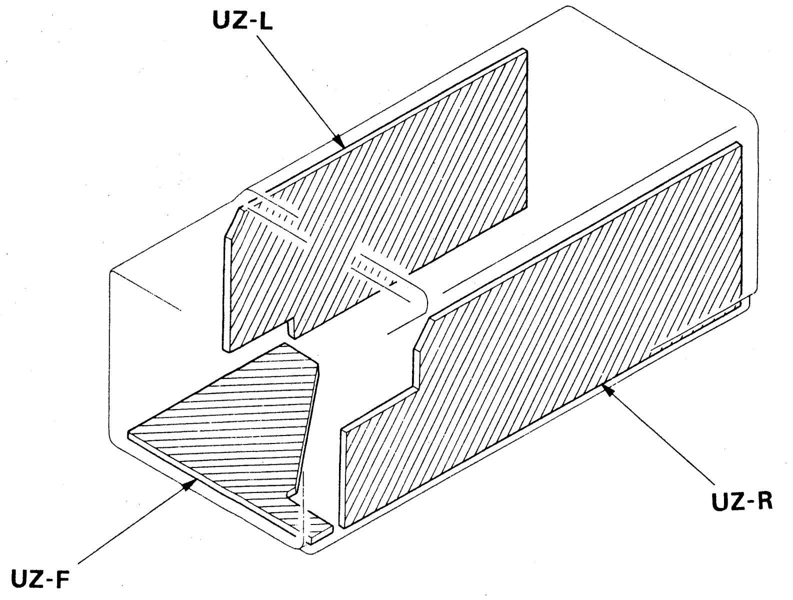

anode
cathode
anode

TLO123
TLR123
TLY123

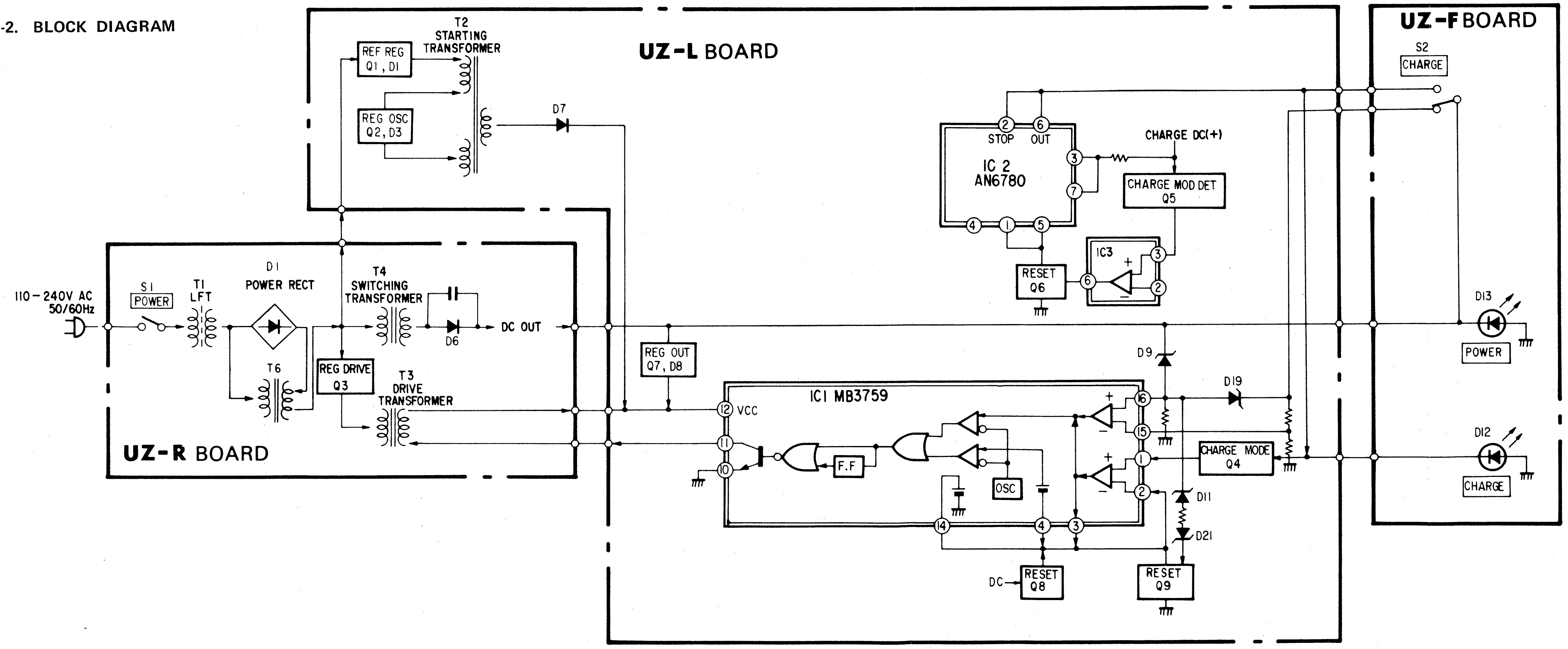

long
short
anode
cathode

SECTION 3
DIAGRAMS

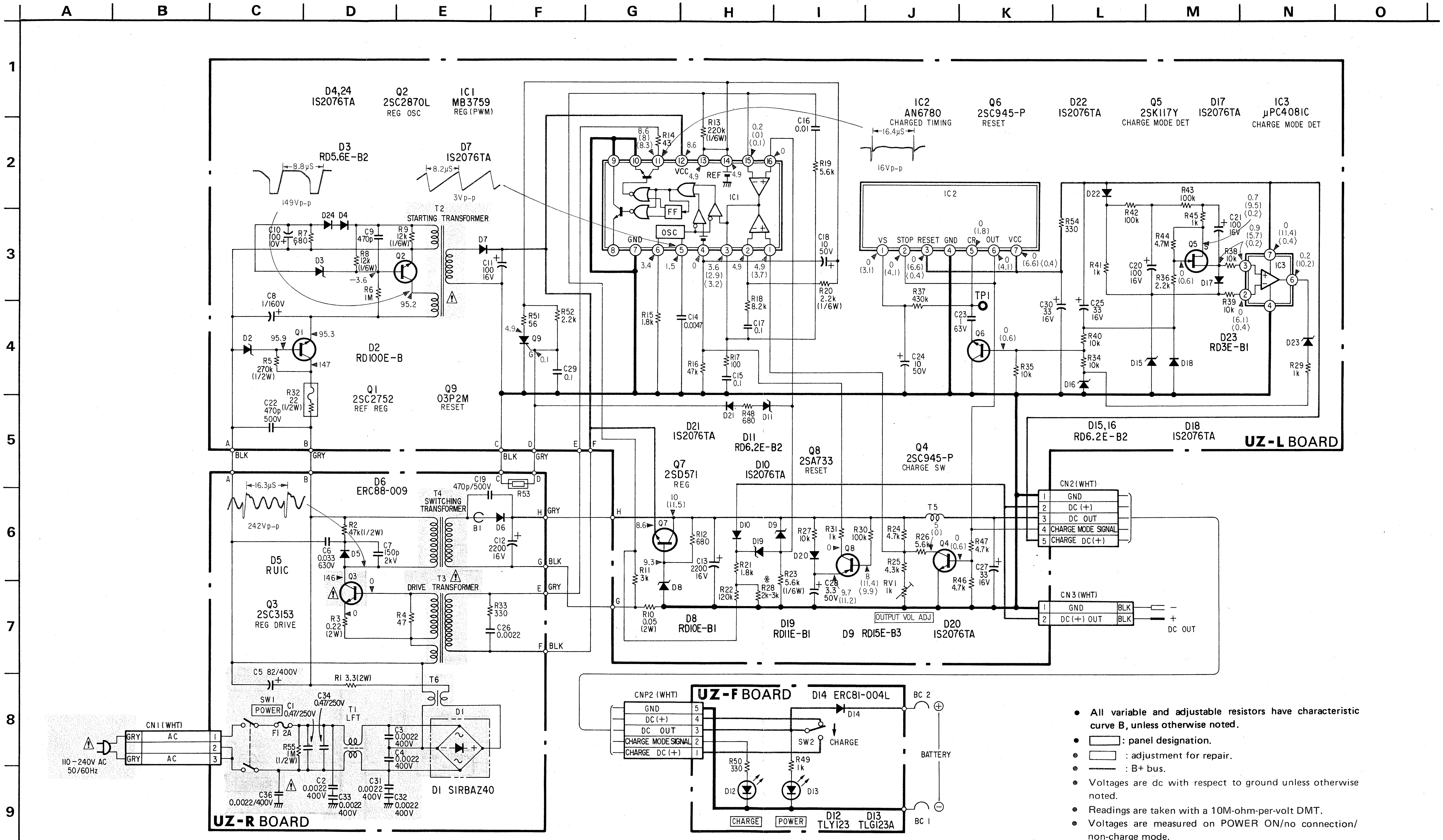
3-1. CIRCUIT BOARDS LOCATION



3-2. BLOCK DIAGRAM


UZ-L BOARD
UZ-R BOARD
UZ-F BOARD
110-240V AC
50/60Hz
S1
POWER
T1
LFT
D1
POWER RECT
T6
T4
SWITCHING
TRANSFORMER
D6
DC OUT
REG DRIVE
Q3
T3
DRIVE
TRANSFORMER
T2
STARTING
TRANSFORMER
REF REG
Q1, D1
REG OSC
Q2, D3
D7
REG OUT
Q7, D8
IC1 MB3759
VCC
F.F
OSC
RESET
Q8
DC
RESET
Q9
D9
D19
D11
D21
CHARGE MODE
Q4
IC 2
AN6780
STOP
OUT
CHARGE DC(+)
CHARGE MOD DET
Q5
IC3
RESET
Q6
S2
CHARGE
D13
POWER
D12
CHARGE

3-3. SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
1
2
3
4
5
6
7
8
9
10
D4,24 IS2076TA
Q2 2SC2870L REG OSC
IC1 MB3759 REG (PWM)
IC2 AN6780 CHARGED TIMING
Q6 2SC945-P RESET
D22 IS2076TA
Q5 2SK117Y CHARGE MODE DET
D17 IS2076TA
IC3 μPC4081C CHARGE MODE DET
D3 RD5.6E-B2
D7 IS2076TA
8.8μS
149Vp-p
8.2μS
3Vp-p
16.4μS
16Vp-p
T2 STARTING TRANSFORMER
D2 RD100E-B
Q1 2SC2752 REF REG
Q9 03P2M RESET
D21 IS2076TA
D11 RD6.2E-B2
D10 IS2076TA
Q8 2SA733 RESET
Q4 2SC945-P CHARGE SW
D15,16 RD6.2E-B2
D18 IS2076TA
UZ-L BOARD
Q7 2SD571 REG
D6 ERC88-009
T4 SWITCHING TRANSFORMER
T3 DRIVE TRANSFORMER
16.3μS
242Vp-p
D5 RU1C
Q3 2SC3153 REG DRIVE
D8 RD10E-B1
D19 RD11E-B1
D9 RD15E-B3
D20 IS2076TA
OUTPUT VOL ADJ
T5
CN2 (WHT)
1 GND
2 DC (+)
3 DC OUT
4 CHARGE MODE SIGNAL
5 CHARGE DC (+)
CN3 (WHT)
1 GND BLK
2 DC (+) OUT BLK
DC OUT
TP1
CN1 (WHT)
GRY AC
110-240V AC 50/60Hz
SW1 POWER
F1 2A
T1 LFT
T6
D1 SIRBAZ40
UZ-R BOARD
CNP2 (WHT)
GND
DC (+)
DC OUT
CHARGE MODE SIGNAL
CHARGE DC (+)
UZ-F BOARD
D14 ERC81-004L
SW2 CHARGE
BC 2
BATTERY
BC 1
CHARGE
POWER
D12 TLY123
D13 TLG123A
BLK
GRY

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

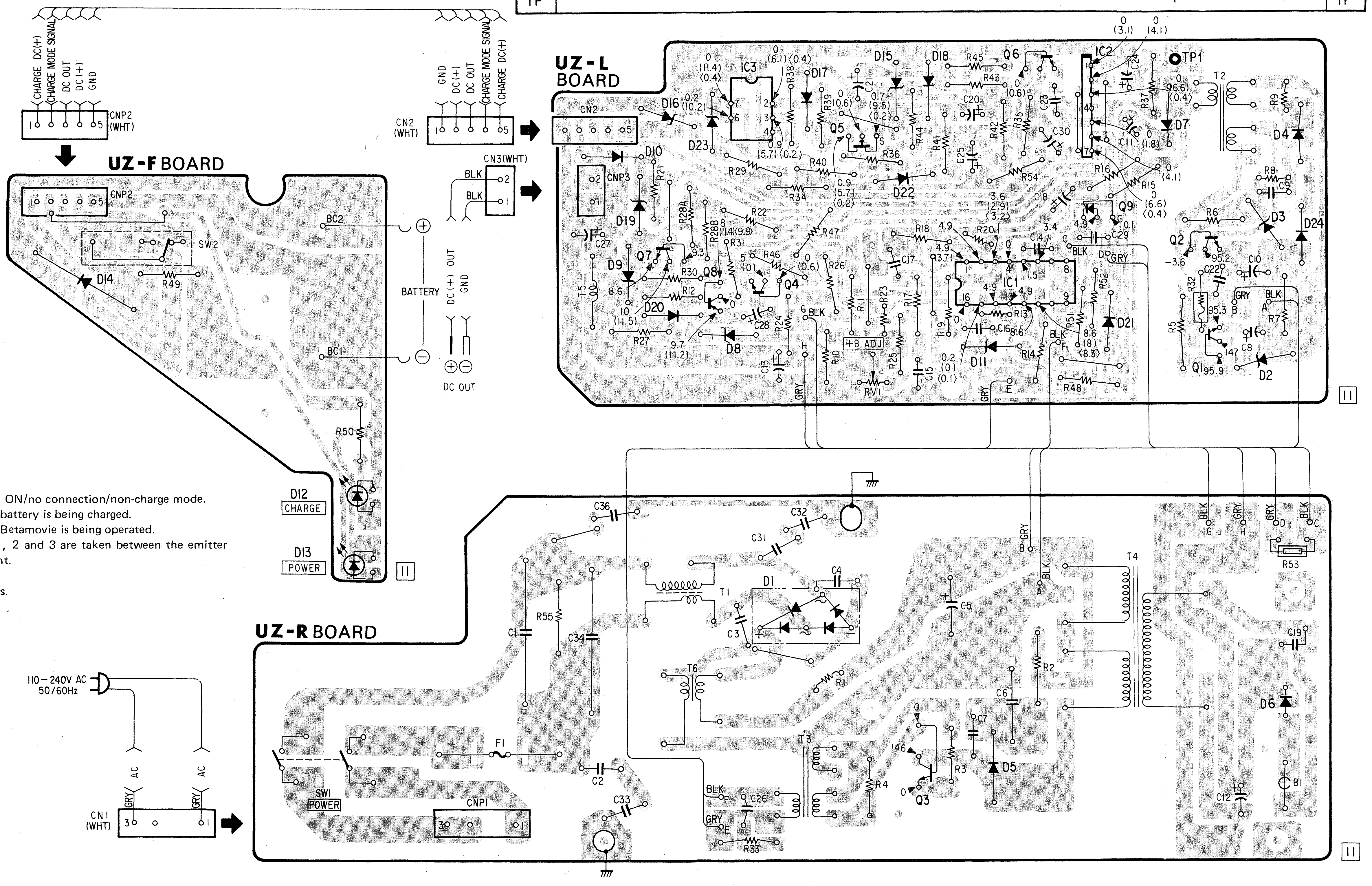
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. k : 1000Ω, M : 1000kΩ

- **All variable and adjustable resistors have characteristic curve B, unless otherwise noted.**
- ▭: panel designation.
- ▭ : adjustment for repair.
- —— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10M-ohm-per-volt DMT.
- Voltages are measured on POWER ON/no connection/non-charge mode.
  ( ): measured when a battery is being charged.
  〈 〉: measured when a Betamovie is being operated.
  The voltages of Q1, 2 and 3 are taken between the emitter of Q2 and each point.

UZ-F **UZ-R** **UZ-L** **UZ-R**

3-4. PRINTED WIRING BOARDS *– Conductor Side –*

Q IC	7	8	IC3 4	5	6 IC1	IC2 9	2 1		Q IC
D	10 19 9	16 23 20 8	17	15 18 22	11	21 7	2 3 4	24	D
ADJ				RV1					ADJ
TP						1			TP



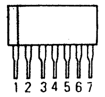
A B C D E F G H I J K L M N O
1 2 3 4 5 6 7 8 9 10
CHARGE DC(+)
CHARGE MODE SIGNAL
DC OUT
DC(+)
GND
CNP2 (WHT)
UZ-F BOARD
SW2
D14
R49
BC2
BC1
BATTERY
DC(+) OUT
GND
DC OUT
R50
D12 CHARGE
D13 POWER
CN2 (WHT)
CN3(WHT)
BLK
UZ-L BOARD
CNP3
TP1
IC1
IC2
IC3
T2
T5
+B ADJ
RV1
GRY
BLK
UZ-R BOARD
110–240V AC 50/60Hz
AC
CN1 (WHT)
SW1 POWER
CNP1
F1
T1
T3
T4
T6
D1
D5
D6
Q3
R53
B1

Note:
no mark : POWER ON/no connection/non-charge mode.
( ) : When a battery is being charged.
〈 〉 : When a Betamovie is being operated.
The voltages of Q1, 2 and 3 are taken between the emitter of Q2 and each point.

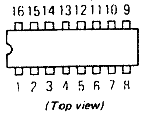
● ▒ : B+ bus.

3-5. SEMICONDUCTORS

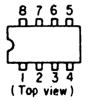
AN6780



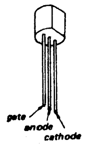
MB3759


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

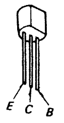
μPC4081C


8 7 6 5
1 2 3 4
(Top view)

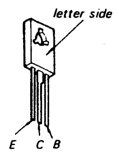
03P2M


gate
anode
cathode

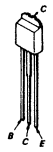
2SA1027R
2SC945-P



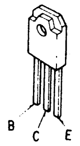
2SC2752


letter side
E
C
B

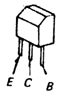
2SC2870L



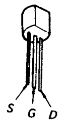
2SC3153



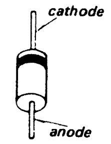
2SD774



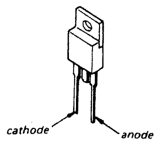
2SK117Y



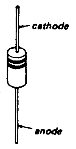
1S1585
ERC81-004L
RD3E-B1
RD6.2E-B2
RD10E-B1
RD11E-B1Z
RD15E-B3
RD100E


cathode
anode

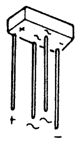
ERC88-009


cathode
anode

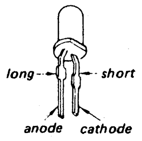
RU1C


cathode
anode

S1RBAZ40



TLG123
TLY123


long
short
anode
cathode

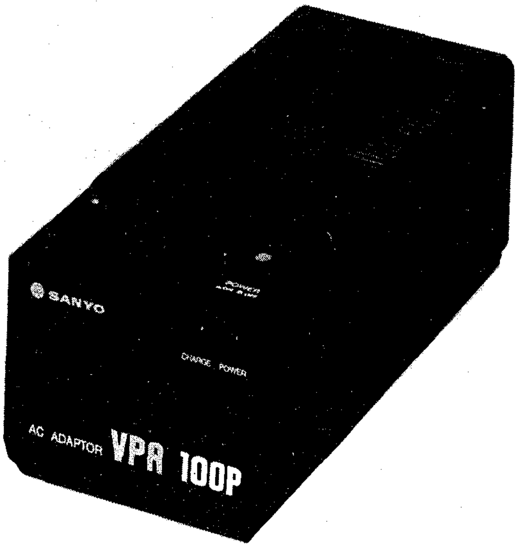
SERVICE MANUAL

SANYO

AC Power Adaptor

VPA 100P

Beta



SPECIFICATIONS

Power requirements	
	110-240 V ac, 50/60 Hz
Power consumption	
	26 W
Output voltage	9.6 V dc
Output current	1.0 A
Charging voltage	14 V dc
Charging current	1.2 A
Rechargeable battery	
	NP-11
Operating temperatures	
	0°C to 40°C (32°F to 104°F)
Storage temperatures	
	-20°C to +65°C (-4°F to 149°F)
Dimensions	Approx. 88 × 78 × 212 mm (w/h/d) ($3\frac{1}{2} \times 3\frac{1}{8} \times 8\frac{3}{8}$ inches)
Weight	Approx. 1.1 kg (2 lb 7 oz) net
Cord length	Mains lead: Approx. 2.2 m (7.2 feet) DC OUT cord: Approx. 2 m (6.5 feet)

SECTION 1
OUTLINE

1-1. FEATURES

The VPA 100P ac power adaptor is designed to enable the VRC 100P Betamovie to operate from house current. It can also be used for charging the NP-11 battery pack.

1-2. PRECAUTIONS

On safety

- This ac power adaptor operates on 110–240V ac without any voltage adaptation.

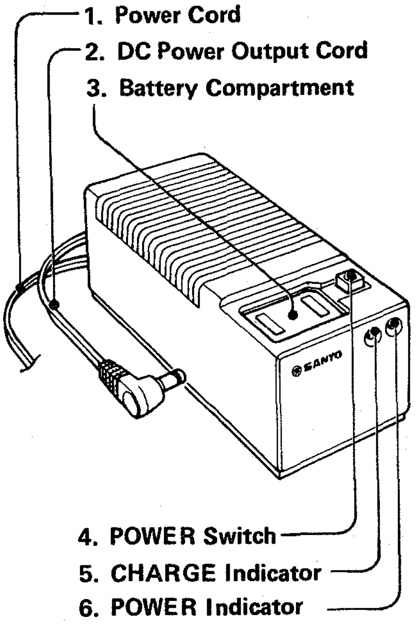
FOR VPA 100PE (UK MODEL)

IMPORTANT
The wires in the mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

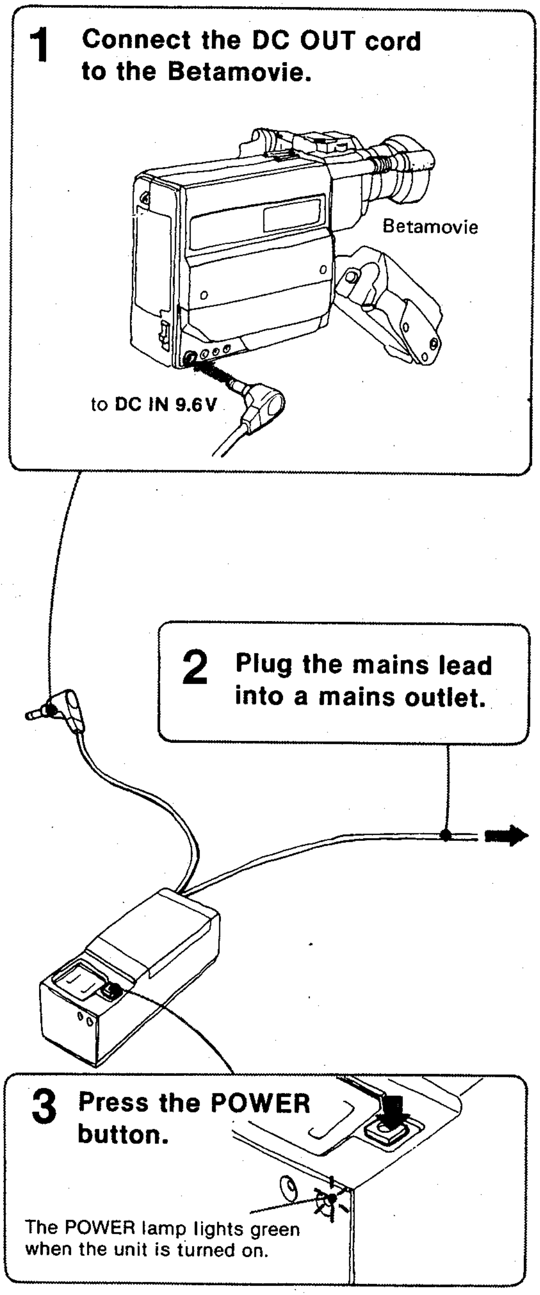
1-3. PART NAMES AND FUNCTIONS



1. **Power Cord**
   Connect the power cord to a standard household AC electrical outlet.
2. **DC Power Output Cord**
   Connect this cord to the DC power input terminal of the Betamovie.
3. **Battery Compartment**
   Insert the battery here to recharge.
4. **POWER Switch**
   ON: Power will be supplied to the Betamovie.
   OFF: The main power supply will be discontinued.
5. **CHARGE Indicator**
   The CHARGE Indicator will illuminate when the POWER Switch 4 is pressed, in order to indicate that charging is taking place. The indicator will cease to illuminate when charging is completed.
6. **POWER Indicator**
   The POWER Indicator will illuminate when the POWER Switch 4 is set to the ON position.

1-4. INSTRUCTION

AC POWER OPERATION OF THE BETAMOVIE



1 **Connect the DC OUT cord to the Betamovie.**

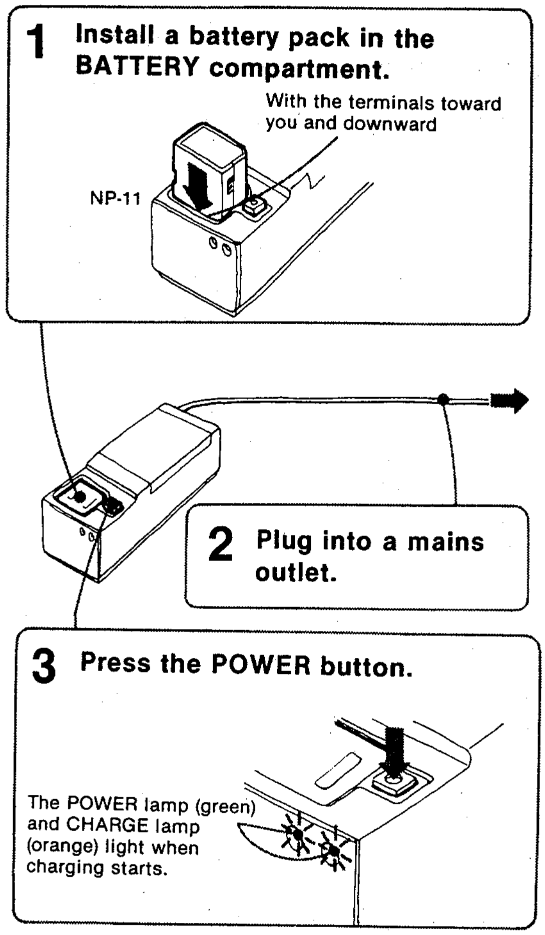
2 **Plug the mains lead into a mains outlet.**

3 **Press the POWER button.**

The POWER lamp lights green when the unit is turned on.

To turn the Betamovie on and off, press the POWER button of the Betamovie.

CHARGING THE BATTERY PACK



1 **Install a battery pack in the BATTERY compartment.**

With the terminals toward you and downward

2 **Plug into a mains outlet.**

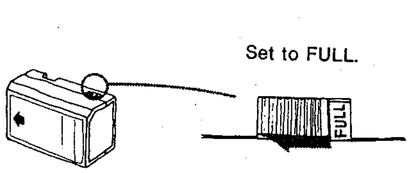
3 **Press the POWER button.**

The POWER lamp (green) and CHARGE lamp (orange) light when charging starts.

Charging time at normal temperature
NP-11: Approx. 1 hour

When the battery has been fully charged
The charging will stop automatically and the CHARGE lamp will go off.
Turn the adaptor off and remove the battery pack.

The FULL/EMP indicator



Set to FULL.

The charging temperature range
The battery pack can be charged from 5°C to 40°C (41°F to 104°F).

The Betamovie cannot be operated during charging.
If the POWER button is pressed when there is a battery pack in the BATTERY compartment, the adaptor is automatically set to the charging mode and power is not supplied to the Betamovie.

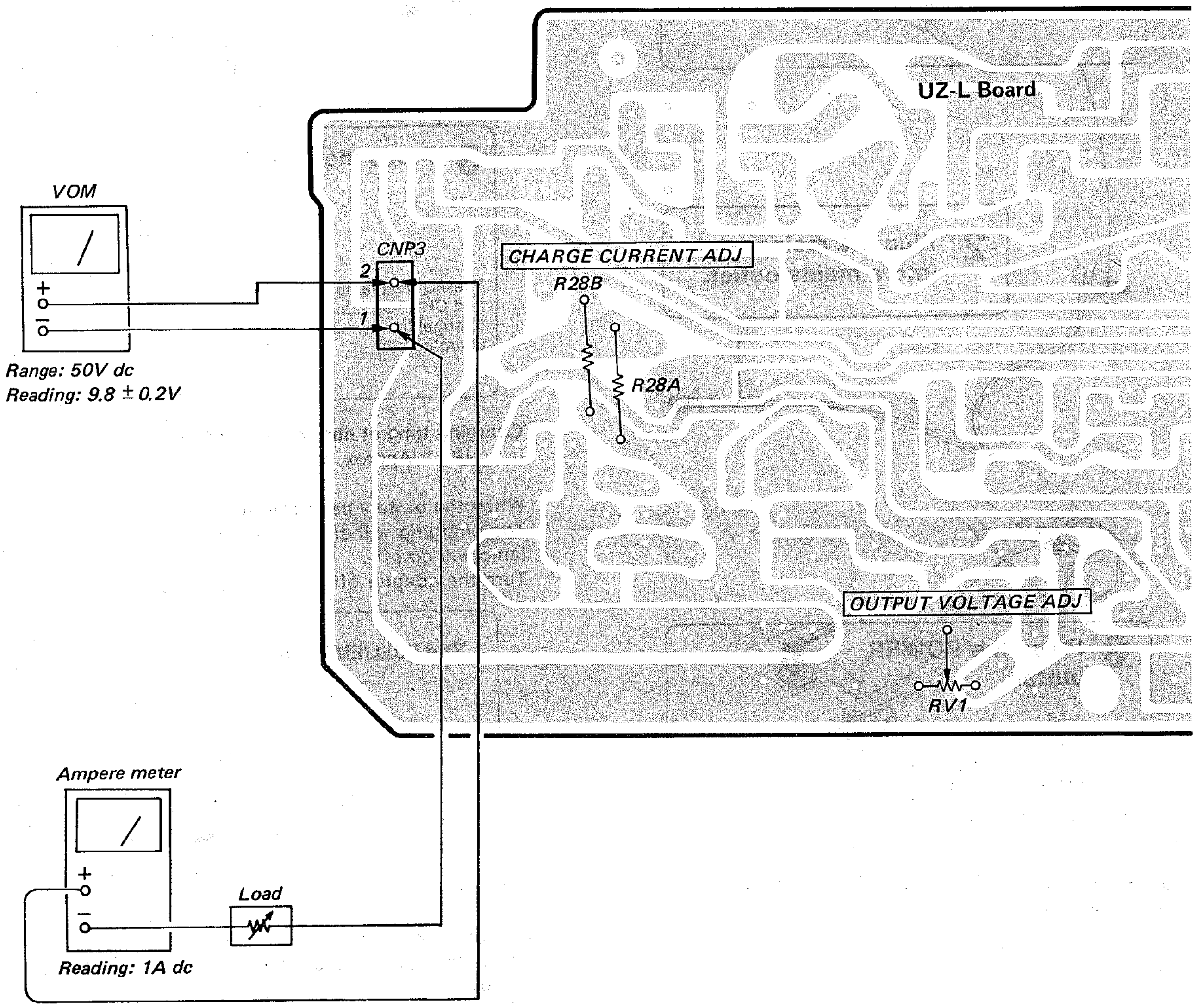
SECTION 2
ADJUSTMENTS

OUTPUT VOLTAGE ADJ

1) Connect a VOM and ampere meter as shown below.
2) Adjust RV1 for 9.8 ± 0.2V dc on the VOM.

CHARGE CURRENT ADJ

1) Short-circuit between two battery terminals on UZ-F board.
2) Mount or disconnect a 12kΩ ¼W carbon resistor (R28B) as shown below, so that the charge current is 1.25 ± 0.2A.


UZ-L Board
VOM
+
−
Range: 50V dc
Reading: 9.8 ± 0.2V
CNP3
2
1
CHARGE CURRENT ADJ
R28B
R28A
OUTPUT VOLTAGE ADJ
RV1
Ampere meter
+
−
Load
Reading: 1A dc

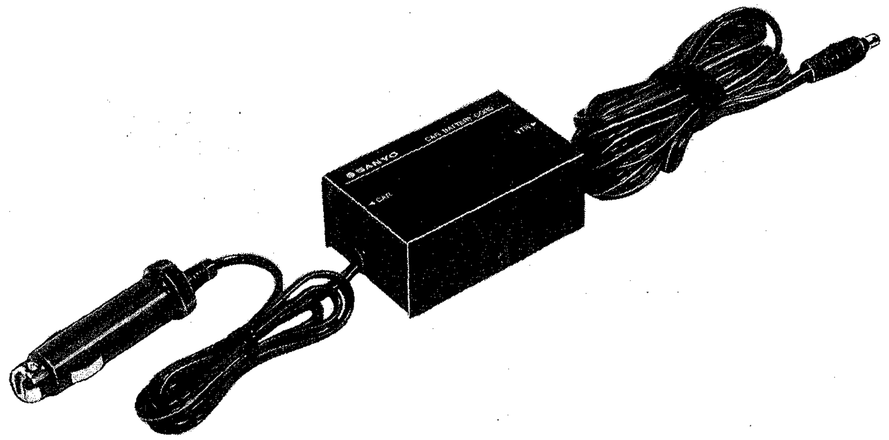
SERVICE MANUAL

Car Buttery Cord

SANYO

VBF 100

Beta



SPECIFICATIONS

Input Voltage: 11 – 16 V dc
Output Voltage: 9.6 V dc
Output Current: 3.5 A (maximum)
Cord Length: input 1.5 m
output 1.3 m

Dimensions: Approx. 60 (w) x 40 (h) x 95 (d) mm
$2\frac{3}{8}$ (w) x $1\frac{5}{8}$ (h) x $3\frac{3}{4}$ (d) inches

Net Weight: Approx. 350 g (12 oz)

SECTION 1
OUTLINE

1-1. FEATURES

The VBF100 car battery cord is designed to operate a Sanyo Betamovie from a 12V car battery through the cigarette lighter socket.

1-2. PRECAUTIONS

- Use the car battery cord only a 12V source of the car.
- The car battery cord is factory set for a negative grounded car.
  When using this car battery cord with a positive grounded car, change the internal connections of the cigarette lighter plug. (Refer to 1-3.)

1-3. POLARITY CHANGE OF THE CIGARETTE LIGHTER PLUG

Check the grounded polarity of the car as follows:
a) Remove the cigarette lighter from the socket.
b) Connect a VOM (25V dc range) to the socket, and then check for movement of the needle.

The plug connection of the VBF100 is set to be used with a negative grounded car.
When using the VBF100 with a positive grounded car, change the plug connection in order as shown in Fig. 1.

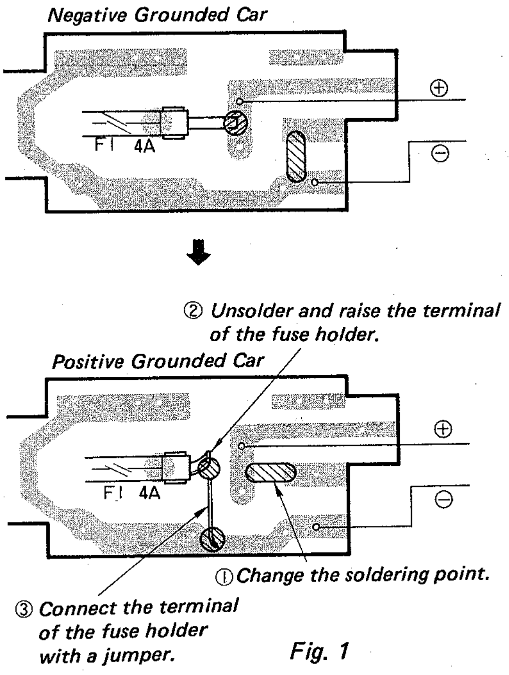

Negative Grounded Car
⊕
⊖
F1 4A
② Unsolder and raise the terminal of the fuse holder.
Positive Grounded Car
⊕
⊖
F1 4A
① Change the soldering point.
③ Connect the terminal of the fuse holder with a jumper.

Fig. 1

Note:
If the polarity of the car battery cord is changed, sparking may occur and the fuse blows when the metalic part of the connected equipment touches any metalic part of the car.

1-4. FUSE REPLACEMENT

When a fuse blows, replace it in order as shown in Fig. 2.

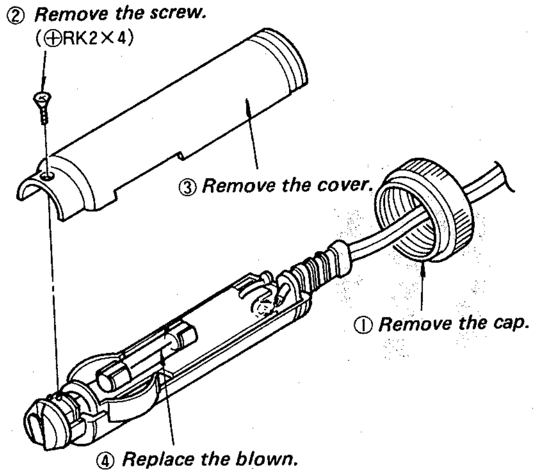
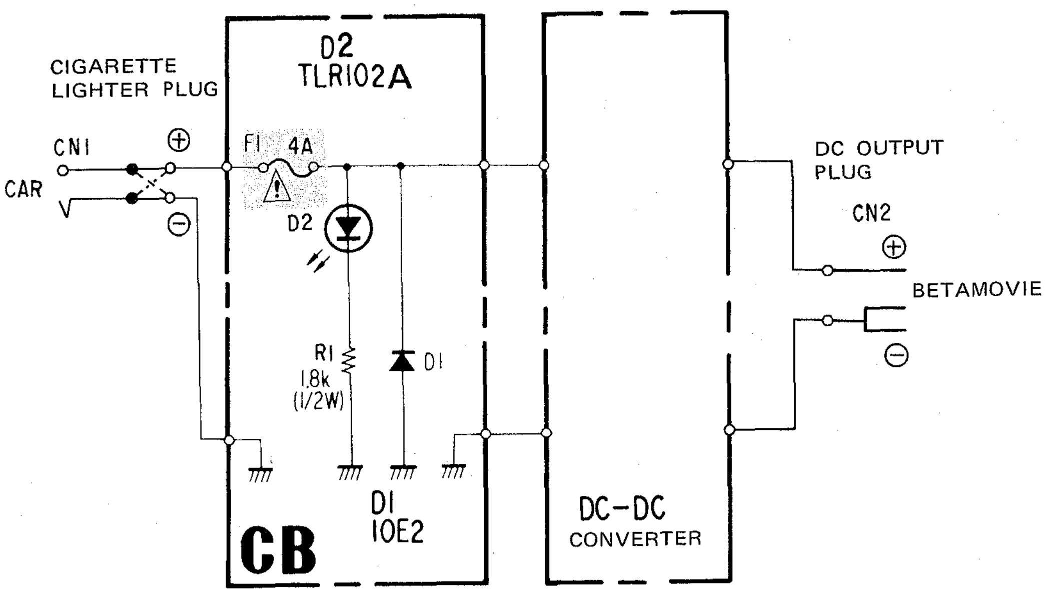

② Remove the screw.
(⊕RK2×4)
③ Remove the cover.
① Remove the cap.
④ Replace the blown.

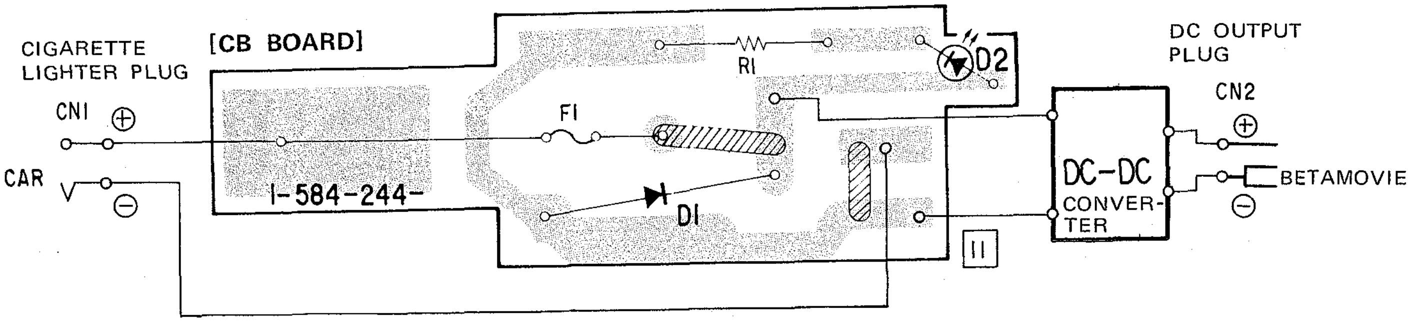
Fig. 2

SECTION 2
DIAGRAMS

– SCHEMATIC DIAGRAM–

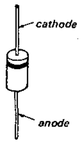

CIGARETTE LIGHTER PLUG
CN1
CAR
⊕
⊖
D2
TLR102A
F1 4A
D2
R1
1.8k
(1/2W)
D1
D1
10E2
CB
DC-DC
CONVERTER
DC OUTPUT PLUG
CN2
⊕
BETAMOVIE
⊖

– PRINTED WIRING BOARD –

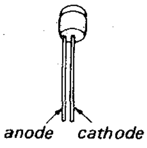

CIGARETTE LIGHTER PLUG
[CB BOARD]
CN1 ⊕
CAR
⊖
1-584-244-
F1
R1
D2
D1
11
DC OUTPUT PLUG
CN2
⊕
DC-DC
CONVER-TER
BETAMOVIE
⊖

– SEMICONDUCTORS –

10E2


cathode
anode

TLR102A


anode
cathode

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SANYO ELECTRIC TRADING CO., LTD.

Dec./'83/3500 SO Printed in Japan

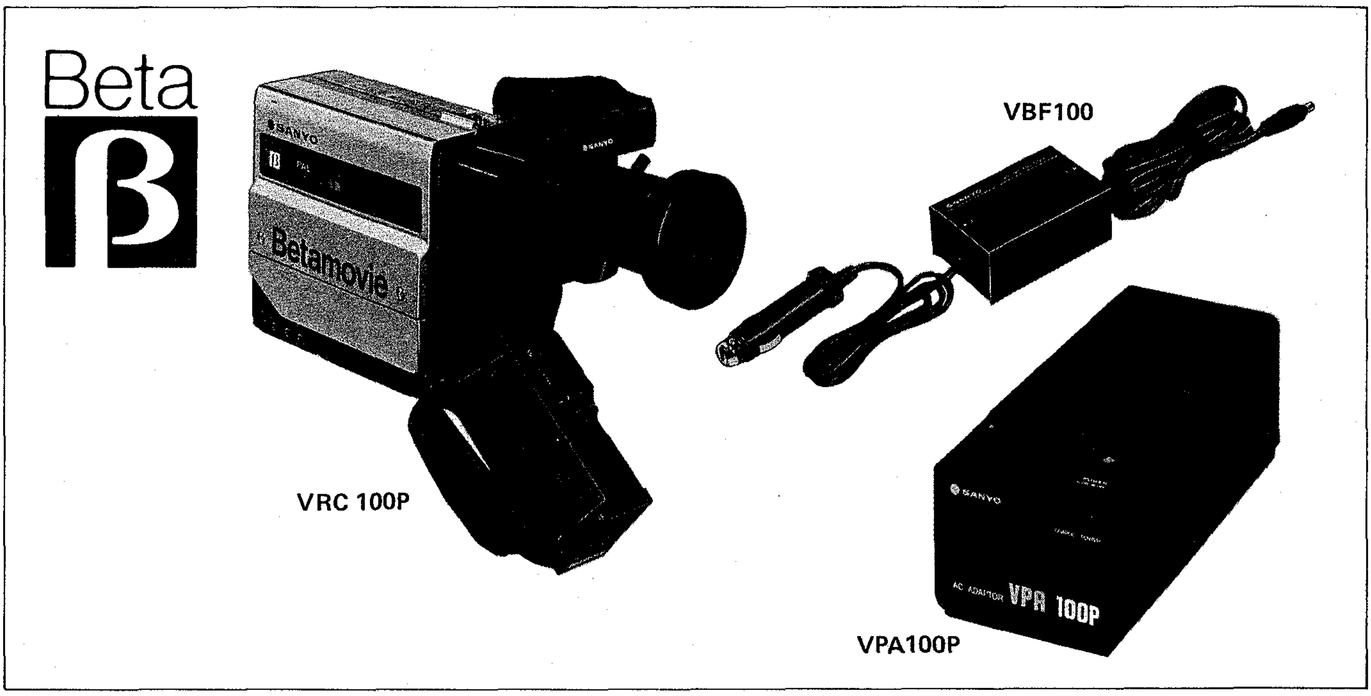
820

PARTS LIST

SANYO

Betamovie
AC Power Adaptor
Car Battery Cord

VRC 100P (PAL)
VPA 100P
VBF 100


Beta
β
VBF100
VRC 100P
VPA100P
SANYO
Betamovie
AC ADAPTOR VPA 100P

BM1P. VAR100P. VBF100

WM-11234

820

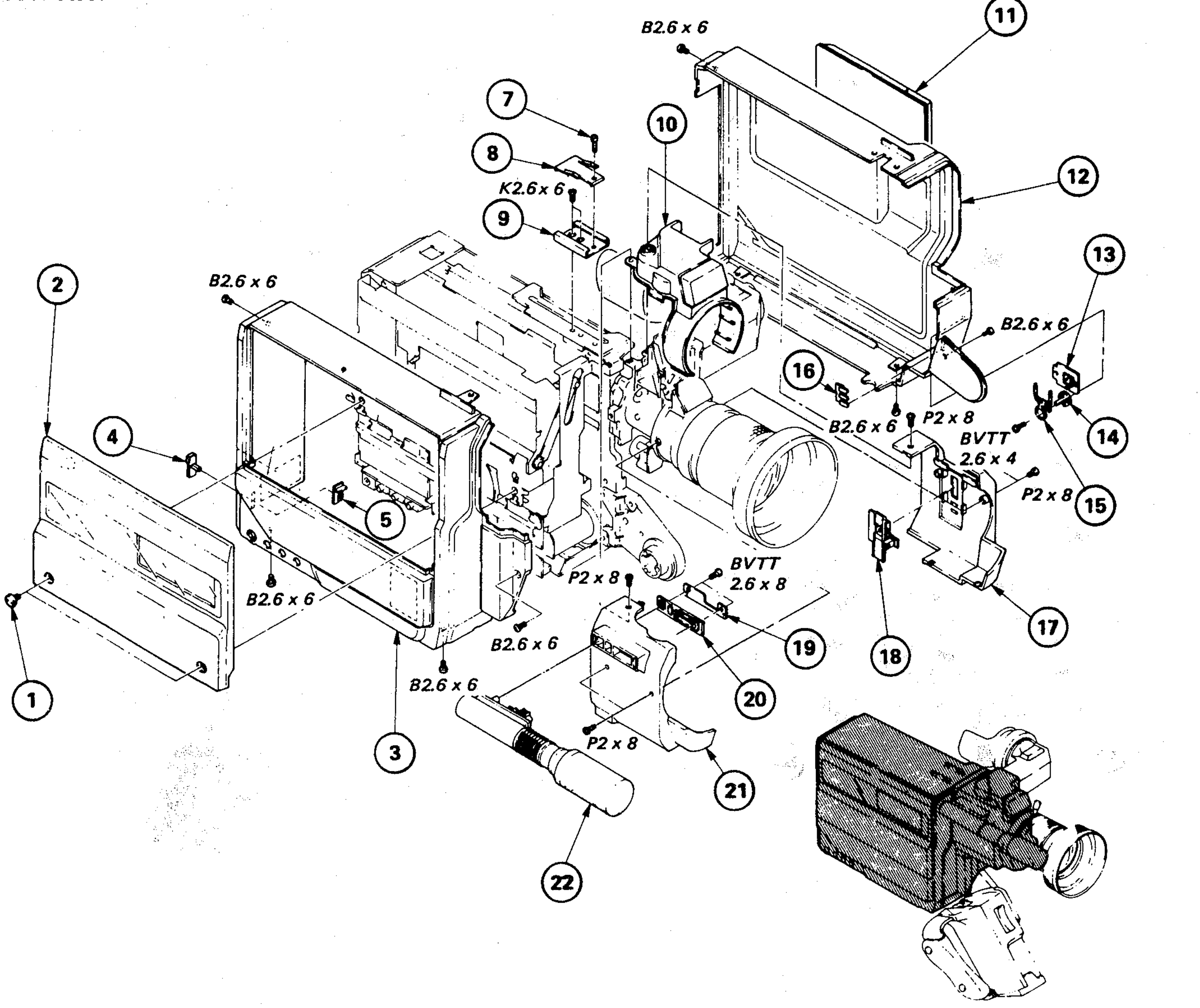
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

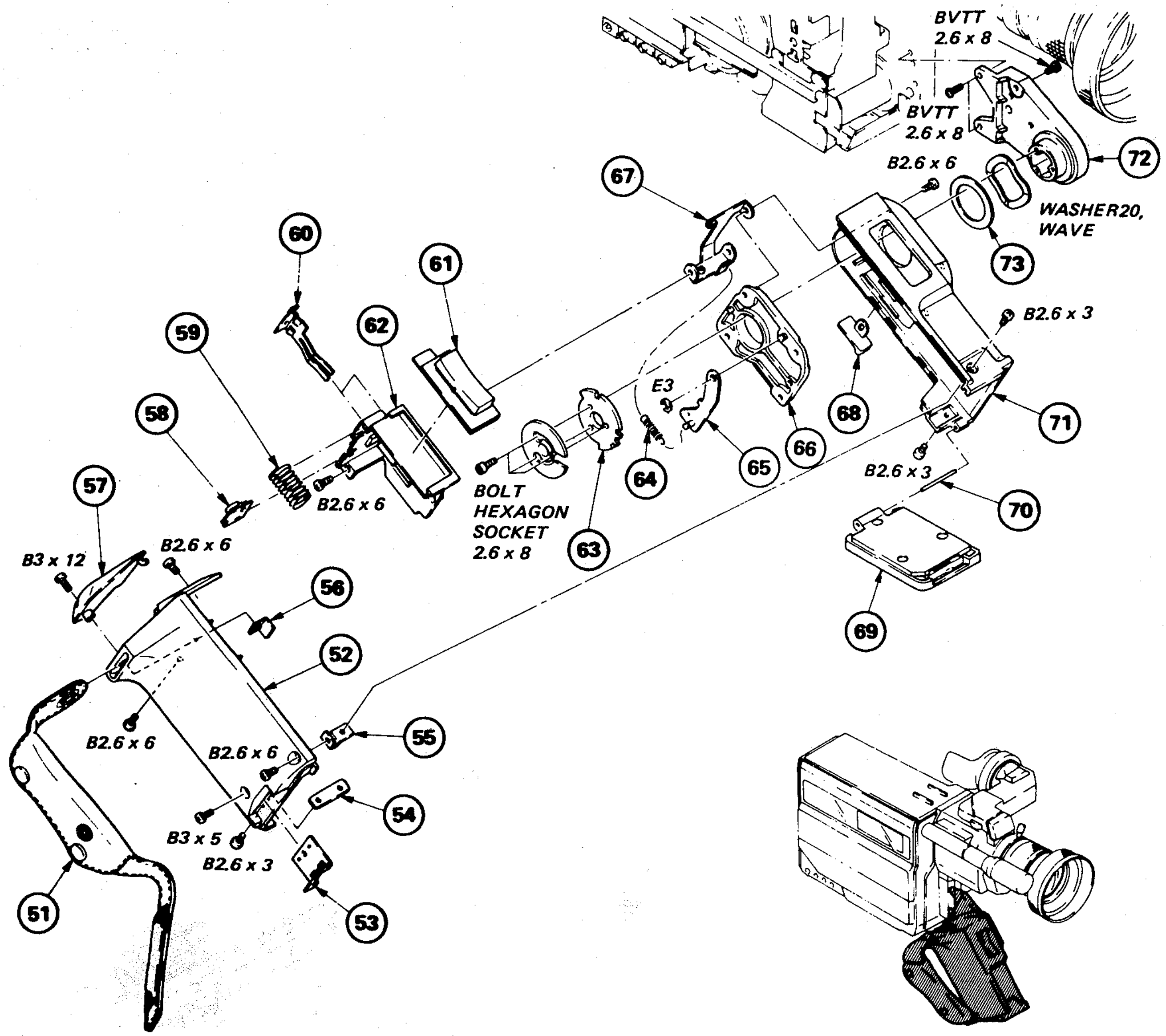
Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

1. COVER ASSEMBLY



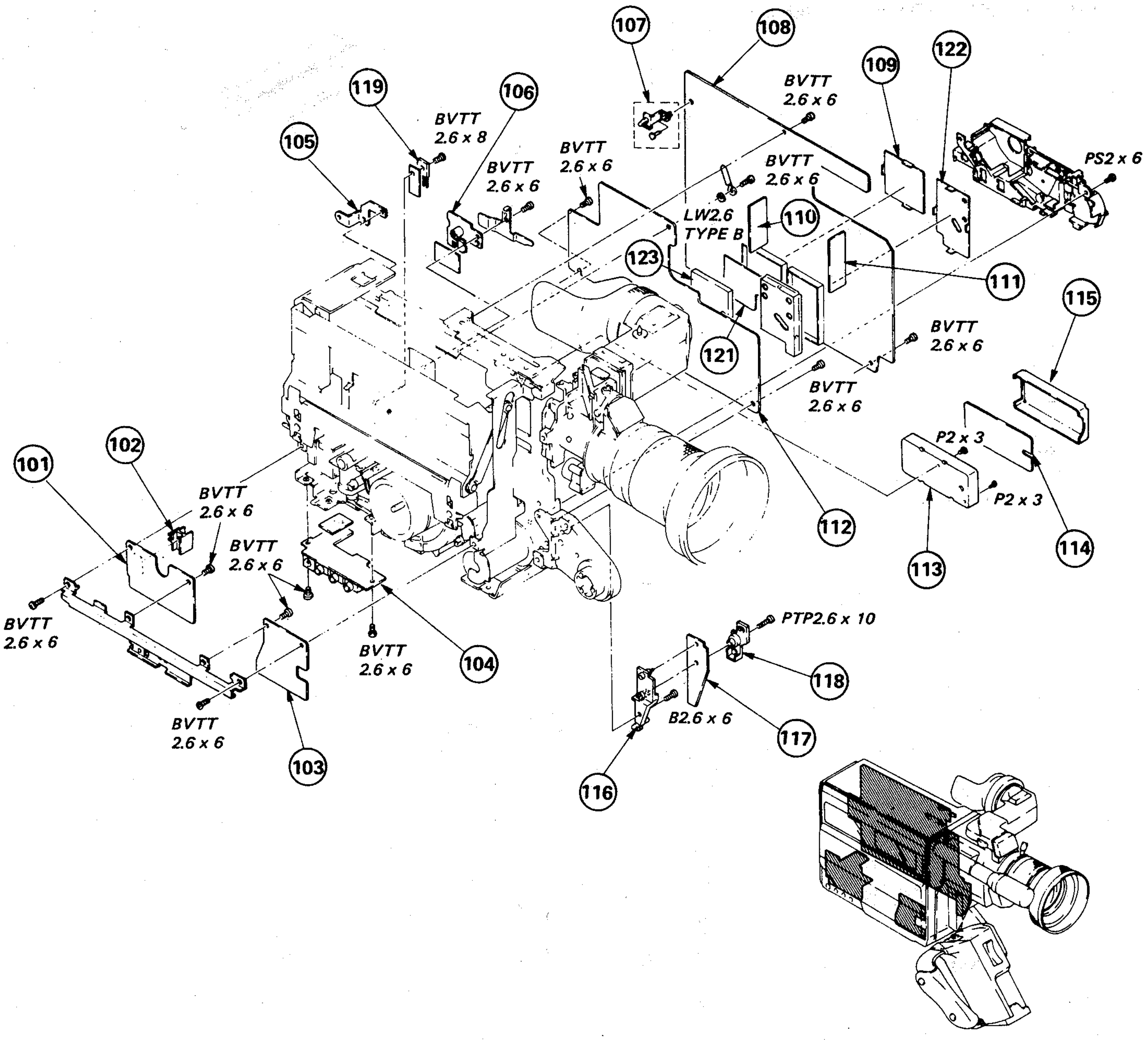
No.	Part No.	Description	Remark
1	FB1+3-669-403-00	Screw, Ornamental	
2	FB1+X-368-148-21	Lid Assy, Cassette Compartment (VRC100)	
3	FB1+3-681-634-00	Cabinet (Left)	
4	FB1+3-681-550-00	Button, Eject	
5	FB1+3-681-551-00	Retainer, Button, Eject	
7	FB1+3-681-544-00	Screw, Stopper, ACC Shoe	
8	FB1+3-681-543-00	Spring, Leaf	
9	FB1+3-681-542-00	Shoe, ACC	
10	FB1+X-368-148-71	Cabinet (T) Assy, Lens (Sanyo)	
11	FB1+3-681-653-00	Pad, Cabinet	
12	FB1+3-681-633-00	Cabinet (Right)	
13	FB1+X-3681-437-0	Button Assy, Stand By	
14	FB1+3-681-552-00	Button, W.B	
15	FB1+3-681-554-00	Spring	
16	FB1+3-681-553-00	Indicator, LED	
17	FB1+3-681-635-00	Cabinet (Right), Lens	
18	FB1+X-3681-801-0	Knob Assy, F. Switch	
19	♦: FB1+3-681-662-00	Plate, Push	
20	FB1+3-681-661-00	Packing (B), Rubber	
21	FB1+3-681-636-00	Cabinet (Left), Lens	
22	FB1+8-814-165-01	Microphone, Built-in (C-2003)	

2. GRIP ASSEMBLY


BVTT 2.6 x 8
BVTT 2.6 x 8
B2.6 x 6
(72)
WASHER20, WAVE
(73)
(67)
(60)
(61)
(62)
(59)
(58)
(57)
B3 x 12
B2.6 x 6
B2.6 x 6
E3
(64)
(65)
(66)
(68)
B2.6 x 3
(71)
B2.6 x 3
(70)
(69)
BOLT HEXAGON SOCKET 2.6 x 8
(63)
(56)
(52)
(55)
B2.6 x 6
B2.6 x 6
B3 x 5
B2.6 x 3
(54)
(53)
(51)

No.	Part No.	Description	Remark
51	FB1+3-681-657-00	Band, Grip	
52	FB1+3-681-603-00	Cabinet (Left), Grip	
53	FB1+3-681-566-00	Bracket (B), Band	
54	♦: FB1+3-681-559-00	Stopper (C), Grip	
55	♦: FB1+3-681-562-00	Stopper (B), Grip	
56	FB1+3-681-565-00	Bracket (A), Band	
57	FB1+3-681-595-00	Cover, Grip	
58	FB1+1-554-561-00	Switch, Tact (Rec)	S930
59	FB3+3-681-569-00	Spring, Compression	
60	FB1+3-681-568-00	Terminal, Battery	
61	FB1+1-554-560-00	Switch, Seesaw (Zoom)	S931
62	FB1+3-681-593-00	Chassis, Grip	
63	♦: FB1+3-681-607-00	Plate, Fixed, Grip	
64	FB3+3-489-093-00	Spring, Tension	
65	♦: FB1+X-3681-424-0	Plate Assy, Lock, Grip	
66	♦: FB1+X-3681-418-0	Table Assy (2), Rotary	
67	♦: FB1+3-681-561-00	Stopper, Grip	
68	FB1+3-681-560-00	Button, Lock Release	
69	FB1+A-6703-335-A	Lid Assy, Battery Case	
70	♦: FB1+3-681-557-00	Shaft, Fulcrum, Battery Case Lid	
71	FB1+3-681-602-00	Cabinet (Right), Grip	
72	♦: FB1+3-681-594-00	Retainer, Grip	
73	♦: FB1+3-651-378-00	Sheet, Friction Adjustment	

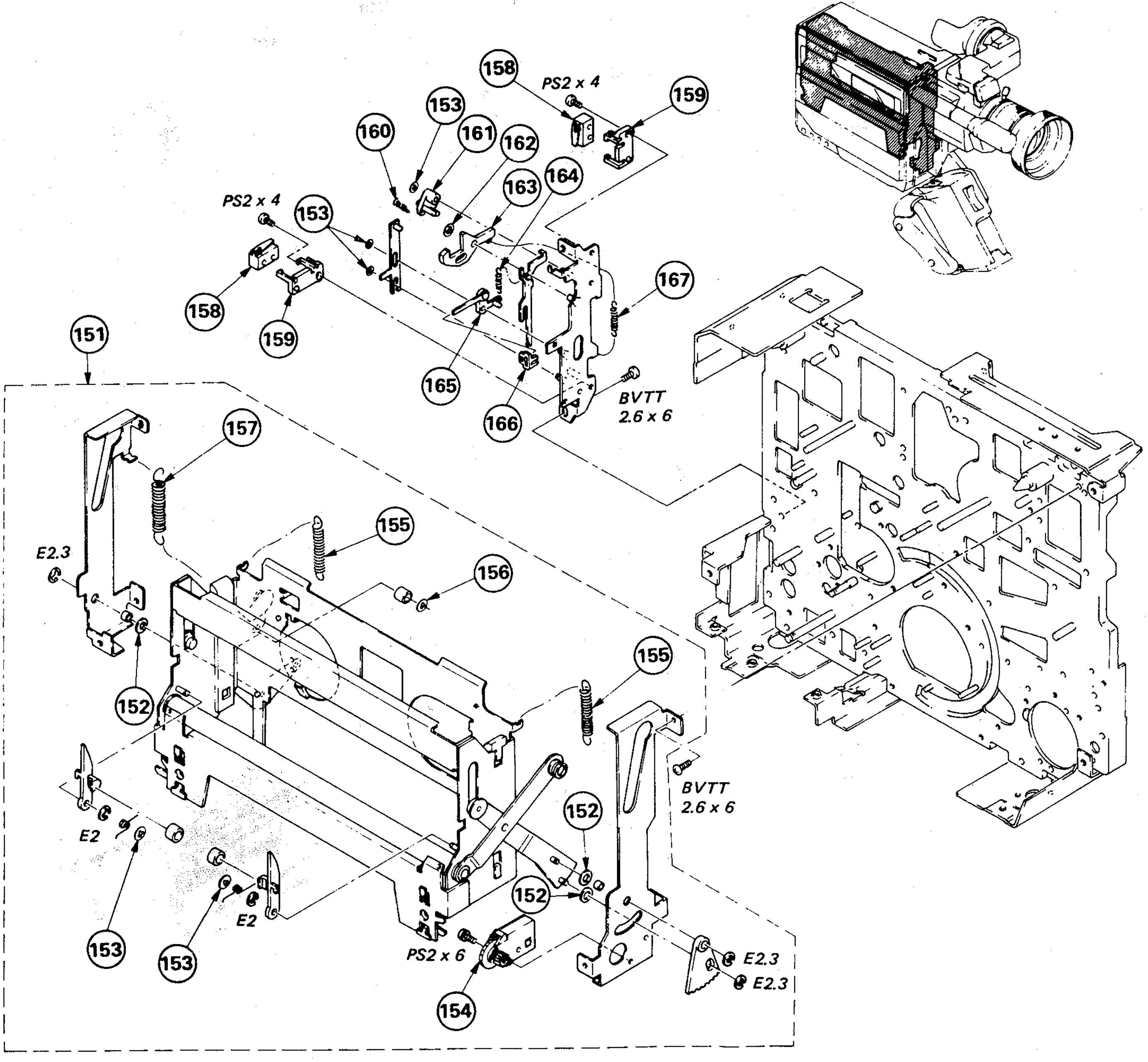
3. BOARD ASSEMBLY



107
108
BVTT 2.6 x 6
109
122
119
106
105
BVTT 2.6 x 8
BVTT 2.6 x 6
BVTT 2.6 x 6
BVTT 2.6 x 6
PS2 x 6
LW2.6 TYPE B
110
123
111
115
121
BVTT 2.6 x 6
BVTT 2.6 x 6
102
101
BVTT 2.6 x 6
P2 x 3
P2 x 3
BVTT 2.6 x 6
112
114
113
BVTT 2.6 x 6
BVTT 2.6 x 6
104
PTP2.6 x 10
118
BVTT 2.6 x 6
B2.6 x 6
117
103
116

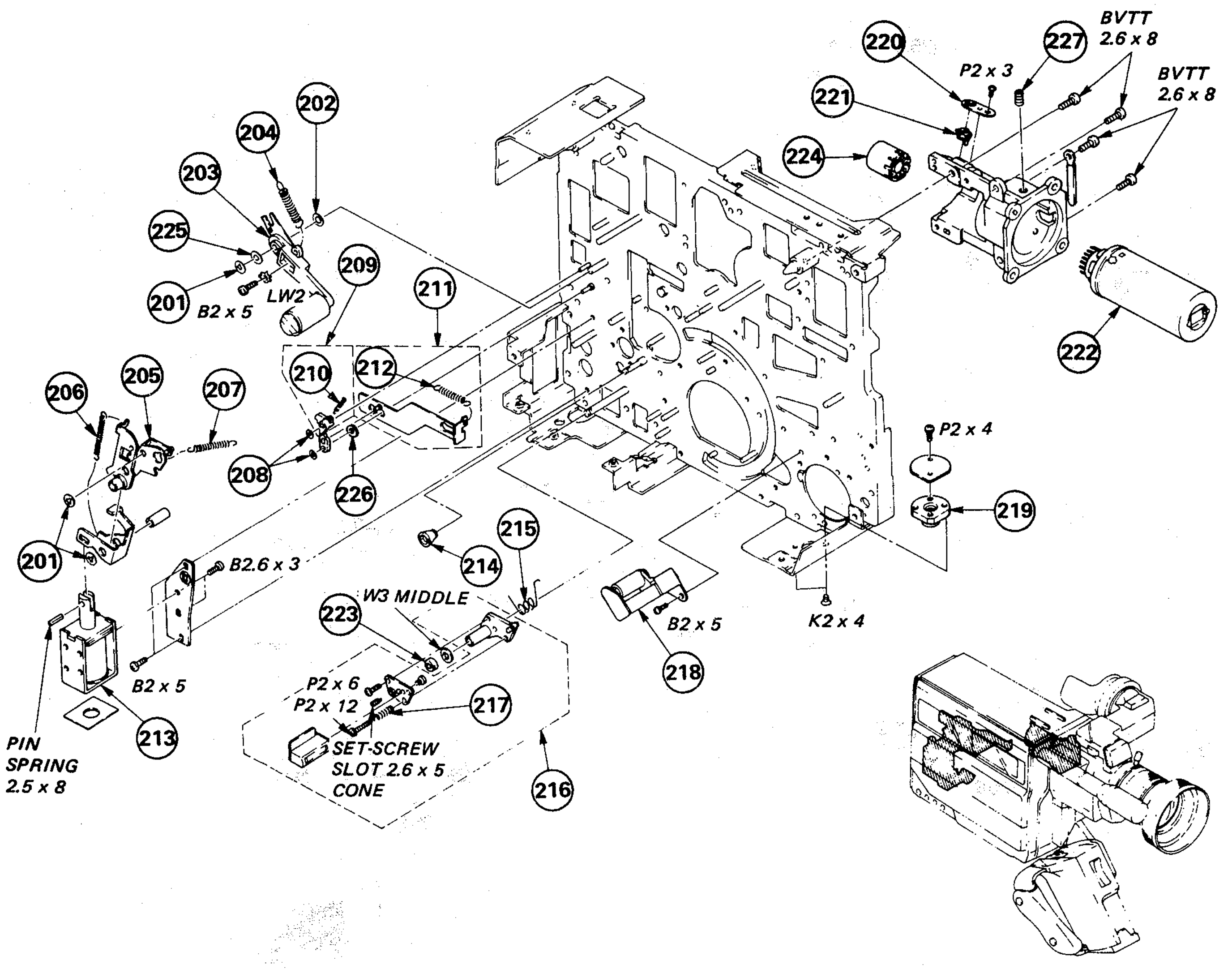
No.	Part No.	Description	Remark
101	🌢: FBP+1-609-864-00	AU-3 Board	
102	FB9+3-681-549-00	Jointer, Eject Button	
103	🌢: FBP+1-609-865-00	AU-4 Board	
104	🌢: FBP+1-609-857-00	JK-2 Board	
105	FB9+3-681-548-00	Bracket, Hook	
106	🌢: FBP+1-609-860-00	RD-8 Board	
107	🌢: FB9+3-681-663-00	Holder, PC Board	
108	🌢: FBP+A-7513-003-A	VC-2 Board, Complete	
109	🌢: FB9+X-3681-802-0	Lid Assy, Rear, SG Shield Case	
110	🌢: FBP+A-7513-004-A	GC-4 Board, Complete	
111	🌢: FBP+A-7513-006-A	GC-5 Board, Complete	
112	🌢: FBP+A-6717-339-A	SS-17 Board, Complete	
113	🌢: FB9+X-3681-804-0	Case (Main) Assy, PA Shield	
114	🌢: FBP+A-7511-947-A	PA-1 Board, Complete	
115	🌢: FB9+3-681-806-00	Lid, Shield Case, PA	
116	FB9+3-681-600-00	Holder, Control PC Board	
117	🌢: FBP+1-610-180-00	SW-28 Board	
118	FB9+3-681-652-00	Guide, Knob	
119	⚠ FB9+8-729-177-22	Transistor 2SB772 Q851	
121	🌢: FBP+A-7513-005-A	GC-3 Board, Complete	
122	🌢: FB9+X-3681-805-0	Lid Assy, Rear, Shield Case, RA	
123	FB9+X-3681-806-0	Lid Assy, Shield Case, SG	

4. CASSETTE COMPARTMENT ASSEMBLY


158
PS2 x 4
159
153
160
161
162
163
164
PS2 x 4
153
158
159
167
151
165
166
BVTT
2.6 x 6
157
155
E2.3
156
155
152
BVTT
2.6 x 6
152
E2
152
E2
153
153
PS2 x 6
E2.3
E2.3
154

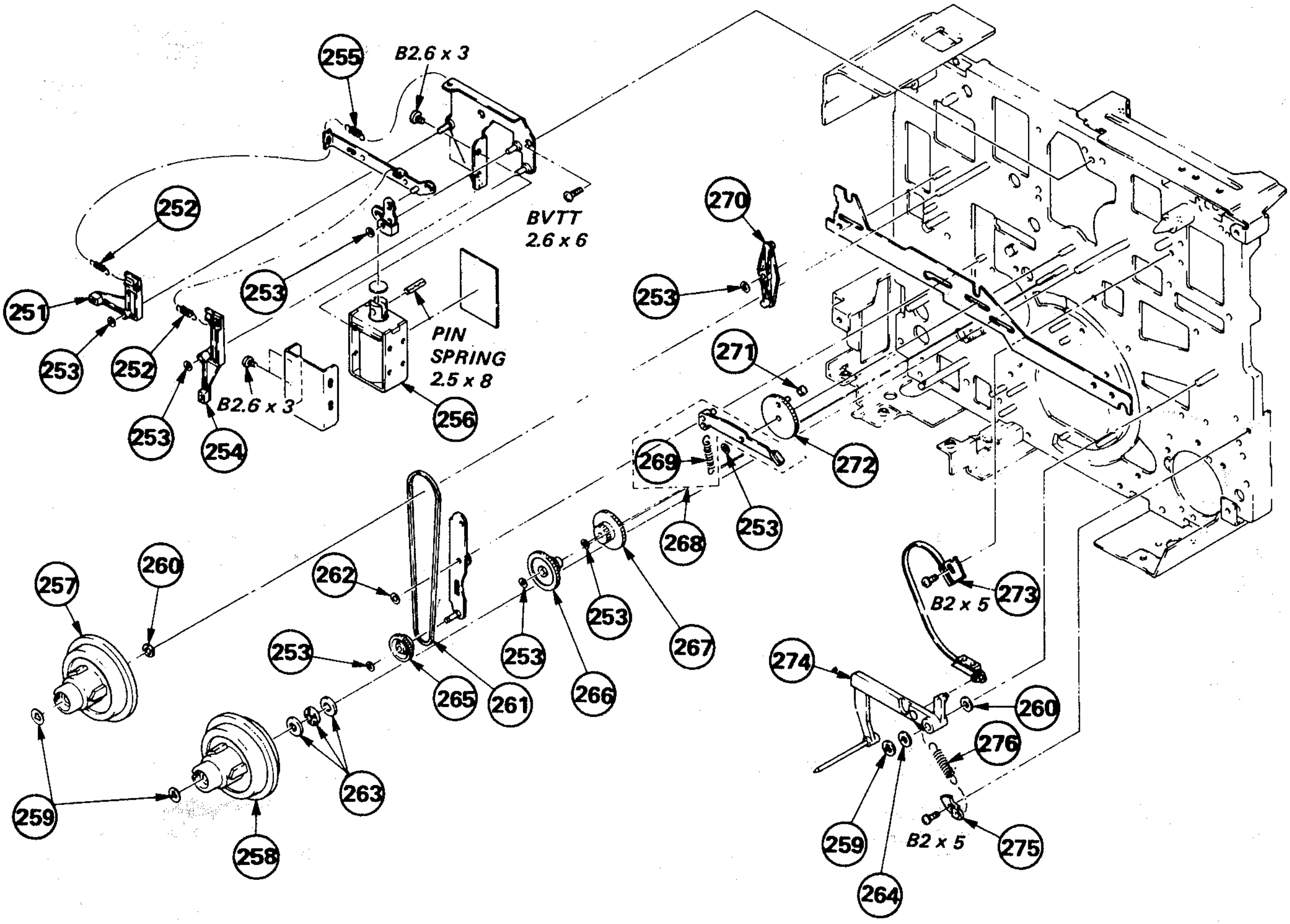
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	♠: FB5+A-6751-176-A	Cassette Compartment Assy	152-157	159	♠: FB5+3-681-587-00	Table, Switch	
152	FB5+3-678-822-01	Spacer		160	FB3+3-561-627-00	Spring, Tension	
153	FB5+3-669-465-00	Washer (1.5), Stopper		161	♠: FB5+3-681-539-00	Lock, Arm	
154	FB5+3-681-528-00	Damper		162	FB5+3-669-596-00	Washer (2.3), Stopper	
155	FB3+3-143-067-00	Spring, Tension		163	♠: FB5+3-681-538-00	Arm, Lock	
156	FB5+3-669-595-00	Washer (2), Stopper		164	FB3+3-567-028-00	Spring, Tension	
157	FB3+3-681-527-00	Spring, Tension		165	♠: FB5+X-3681-417-0	Detection Assy, Lock	
158	FB5+1-554-582-00	Switch, Micro S301 (C-IN)		166	♠: FB5+3-681-588-00	Stay, Detection	
		Switch, Micro S302 (C-C DWN)		167	FB3+3-555-026-00	Spring, Tension	

5. PINCH ASSEMBLY


220
227
BVTT 2.6 x 8
P2 x 3
BVTT 2.6 x 8
221
224
202
204
203
225
201
B2 x 5
LW2
209
211
222
210
212
206
205
207
208
226
P2 x 4
219
215
214
201
B2.6 x 3
W3 MIDDLE
223
B2 x 5
218
K2 x 4
P2 x 6
P2 x 12
217
SET-SCREW
SLOT 2.6 x 5
CONE
216
PIN
SPRING
2.5 x 8
213
B2 x 5

No.	Part No.	Description	Remark
201	FB7+3-669-596-00	Washer (2.3), Stopper	
202	FB7+3-701-439-21	Washer	
203	♠: FB7+A-6747-230-A	Arm Block Assy, Pinch	204
204	FB3+3-536-786-00	Spring, Tension	
205	♠: FB7+X-3681-406-0	Lever Assy, Pinch Press	
206	FB3+3-681-452-00	Spring, Tension	
207	FB3+3-578-397-00	Spring, Tension	
208	FB7+3-669-465-00	Washer (1.5), Stopper	
209	FB3+A-6747-235-A	Lever (E) Block Assy, Eject	210
210	FB3+3-541-667-00	Spring, Tension	
211	FB7+A-6747-234-A	Lever (G) Block Assy, Release	212
212	FB3+3-535-346-00	Spring, Tension	
213	⚠ FB7+1-454-357-21	Solenoid, Plunger (Pinch) PM902	
214	FB7+3-681-622-00	Nut, Adjustment, CTL Head	
215	FB3+3-681-621-00	Spring	
216	FB7+A-6736-038-A	Head Block Assy, AC	217
217	FB3+3-669-615-00	Spring, Compression	
218	FB7+8-825-561-10	Head, Eraze (EF254-21)	
219	FB7+3-681-547-00	Bracket, Tripod	
220	♠: FB7+3-681-809-00	Retainer, Pin, Adjustment	
221	FB7+3-681-808-00	Pin, Adjustment	
222	FB6+8-701-032-29	CT-3222	
223	FB7+3-669-318-00	Nut, Adjustment, Guide	
224	FB7+1-562-325-00	Socket Assy, Image Pickup Tube	
225	FB7+3-701-439-01	Washer	
226	FB7+3-570-615-11	Poly-Washer (DIA. 1.2)	
227	FB7+3-701-508-00	Set Screw, Double Point 3 x 6	

6. REEL ASSEMBLY


255
B2.6 x 3
252
251
253
252
253
254
B2.6 x 3
253
PIN
SPRING
2.5 x 8
256
BVTT
2.6 x 6
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B2 x 5
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B2 x 5
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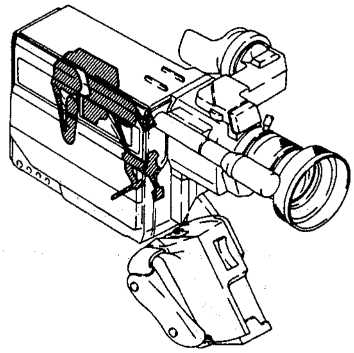
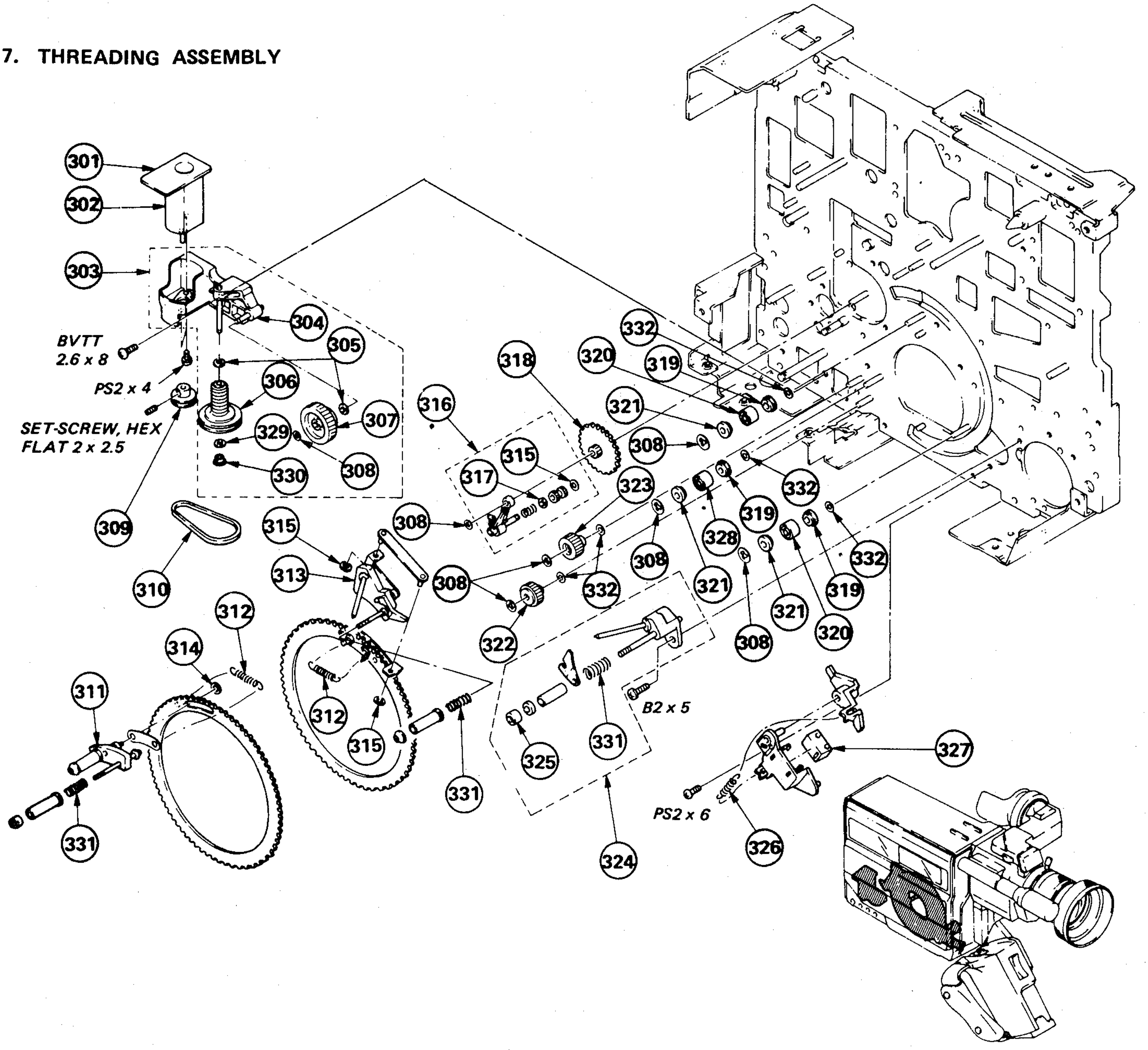


No.	Part No.	Description	Remark
251	FB8+A-6741-054-A	Brake Assy, Take-up	
252	FB3+3-307-938-00	Spring, Tension	
253	FB8+3-669-465-00	Washer (1.5), Stopper	
254	FB8+A-6741-053-A	Brake Assy, Supply	
255	FB3+3-527-025-00	Spring, Tension	
256	⚠ FB8+1-454-357-11	Solenoid, Plunger (Brake) PM901	
257	FB8+X-368-140-45	Table Assy (Take-up), Reel	
258	FB8+X-368-140-54	Table Assy (Supply), Reel	
259	FB8+3-669-596-00	Washer (2.3), Stopper	
260	FB8+3-701-439-21	Washer	
261	FB8+3-681-447-00	Belt, FWD	
262	FB8+3-570-615-00	Poly-Washer (DIA. 1.2)	
263	FB8+3-681-449-00	Bearing, Thrust	
264	FB8+3-701-439-01	Washer	
265	FB8+3-681-478-00	Gear, FWD	
266	FB8+3-681-435-00	Gear (B), Driving	
267	FB8+3-681-434-00	Gear (A), Driving	
268	FB8+A-6741-055-A	Brake Assy, Soft	269
269	FB3+3-672-461-00	Spring, Tension	
270	FB8+3-681-438-00	Lever, Pinch Conversion	
271	♦: FB8+3-681-443-00	Roller, Driving	
272	FB8+3-681-436-00	Gear (C), Driving	
273	FB8+X-3681-410-0	Band Assy, Tension Regulator	
274	♦: FB8+X-3681-402-0	Arm Assy, Tension Regulator	
275	FB8+3-681-439-00	Retainer, Spring	
276	FB3+3-536-767-XX	Spring, Tension	

7. THREADING ASSEMBLY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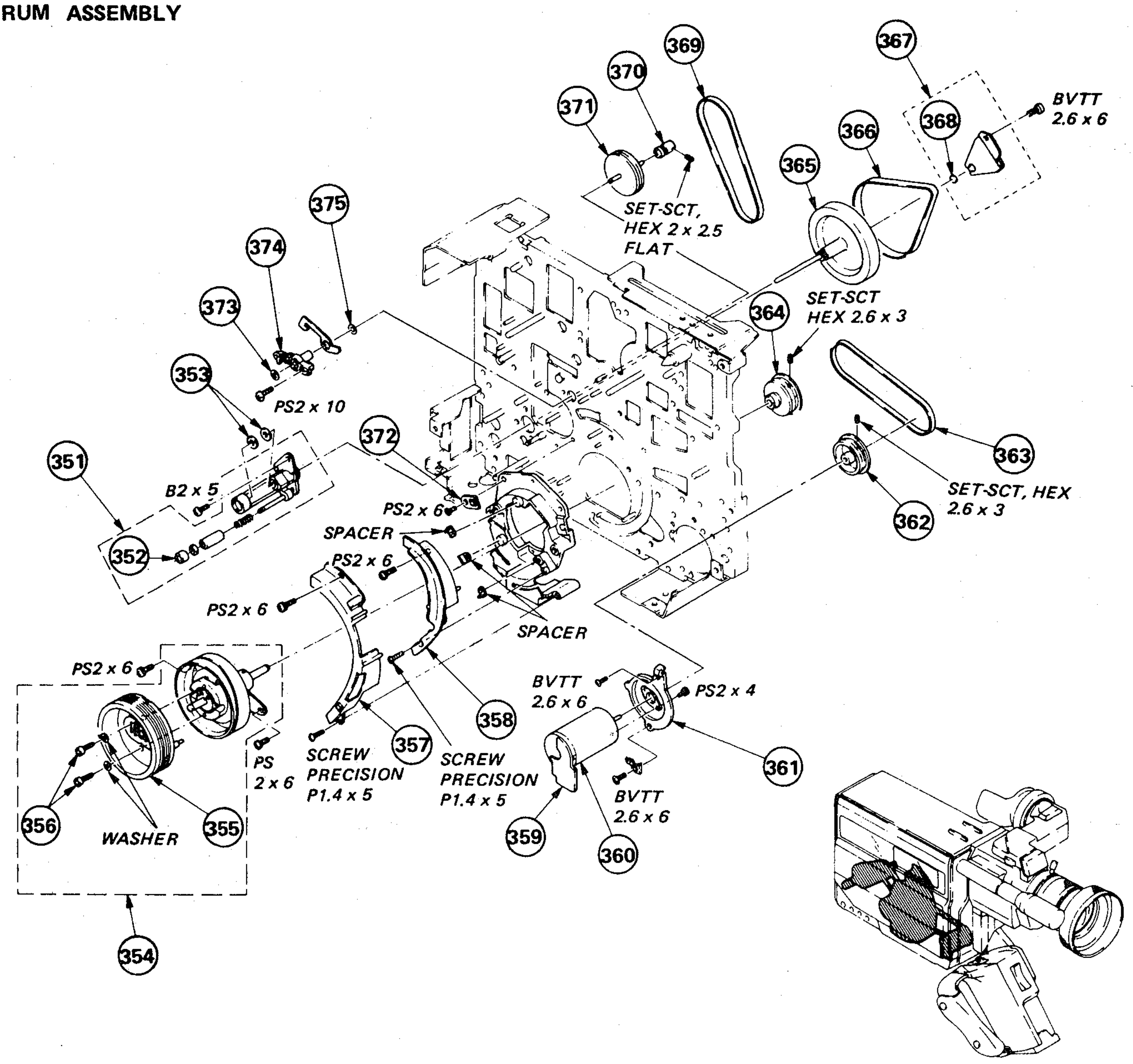
331
332
BVTT 2.6 x 8
PS2 x 4
SET-SCREW, HEX FLAT 2 x 2.5
B2 x 5
PS2 x 6

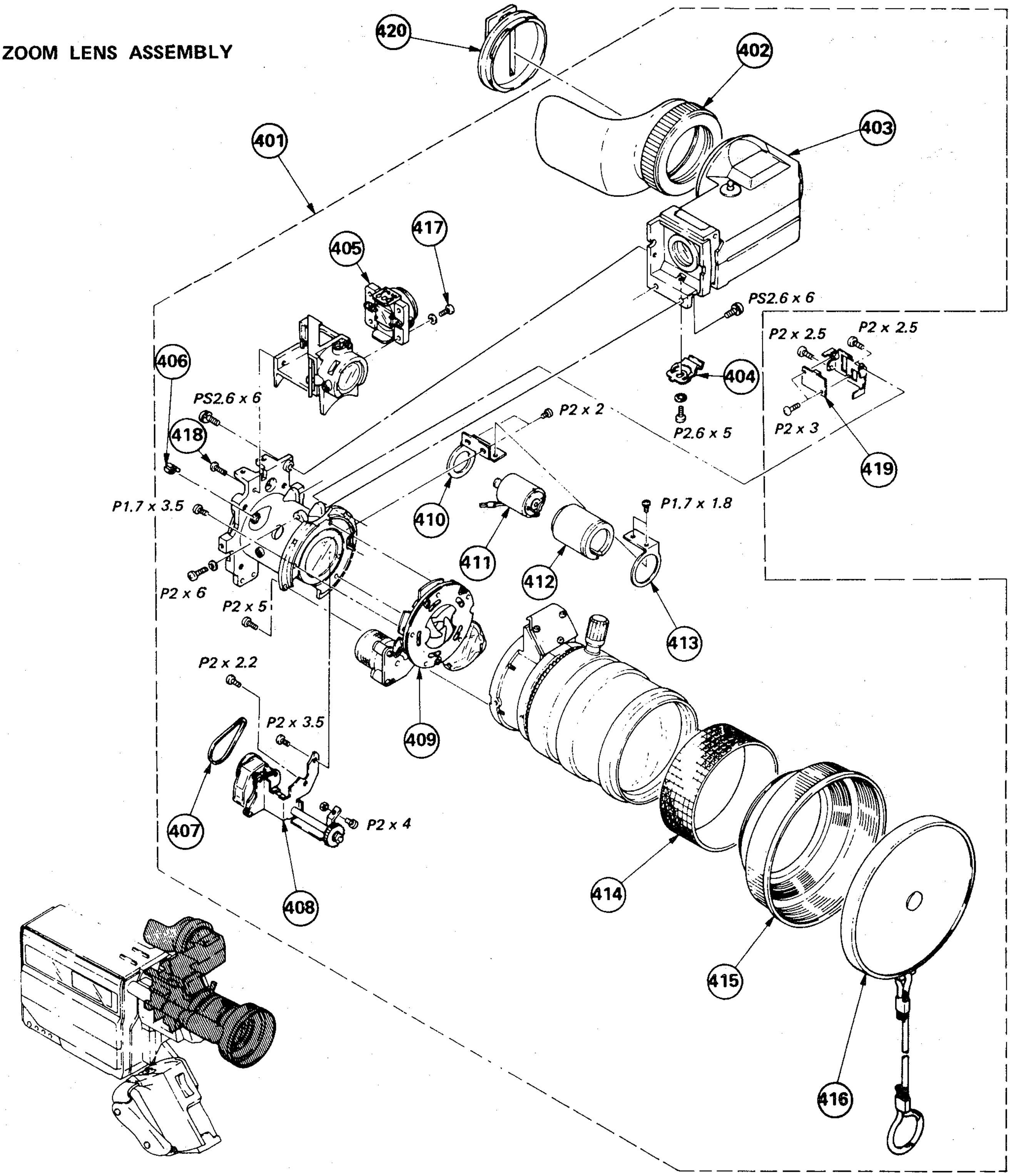
No.	Part No.	Description	Remark
301	♠: FB6+1-609-855-00	LM-12 Board	
302	FB6+8-835-098-01	Motor, DC (DNR–6600A) M901 (Loading)	
303	♠: FB6+A-6737-126-A	Case Block Assy, Motor	304, 305, 306, 307, 308, 329, 330
304	♠: FB6+X-3681-430-0	Case Assy, Motor	
305	FB6+3-701-437-21	Washer	
306	♠: FB6+X-3681-429-0	Gear Assy, Worm	
307	♠: FB6+3-681-422-00	Wheel, Worm	
308	FB6+3-669-465-00	Washer (1.5), Stopper	
309	FB6+3-681-423-00	Pulley, Motor, Loading	
310	FB6+3-681-424-00	Belt, Loading	
311	♠: FB6+A-6750-151-A	Base Block Assy, TG5	331
312	FB6+3-564-935-00	Spring, Tension	
313	♠: FB6+A-6746-033-A	Base Block Assy, TG4	331
314	FB6+3-681-678-00	Washer, Stopper	
315	FB6+3-570-615-00	Poly-Washer (DIA. 1.2)	
316	FB6+A-6747-233-A	Arm Assy, EG	315, 317
317	FB6+3-701-436-01	Washer, 1.6	
318	FB6+3-681-437-00	Gear (A), Eject	
319	FB6+3-681-433-00	Roller (C), Ring Guide	
320	FB6+3-681-429-00	Roller (B), Ring Guide	
321	FB6+3-681-428-00	Roller (A), Ring Guide	
322	FB6+3-681-430-00	Gear (S), Loading	
323	FB6+3-681-431-00	Gear (T), Loading	
324	♠: FB6+A-6746-032-A	Base Block Assy, TG1	331, 325
325	FB6+3-669-446-00	Nut, Guide, No.6	
326	FB3+3-307-938-00	Spring, Tension	
327	FB6+1-554-581-00	Switch, Micro (Loading End) S303	
328	FB6+3-681-674-00	Roller (D), Guide, Ring	
329	FB6+3-701-437-01	Washer	
330	FB6+3-703-075-00	Cap 2, Shaft	
331	FB3+3-669-666-00	Spring, Compression	
332	FB6+3-701-437-11	Washer	

8. DRUM ASSEMBLY


369
370
367
371
BVTT 2.6 x 6
368
366
365
SET-SCT, HEX 2 x 2.5 FLAT
375
374
SET-SCT HEX 2.6 x 3
364
373
353
PS2 x 10
372
363
351
SET-SCT, HEX 2.6 x 3
362
B2 x 5
PS2 x 6
SPACER
352
PS2 x 6
PS2 x 6
SPACER
PS2 x 6
BVTT 2.6 x 6
PS2 x 4
358
357
PS 2 x 6
SCREW PRECISION P1.4 x 5
SCREW PRECISION P1.4 x 5
361
BVTT 2.6 x 6
356
WASHER
355
359
360
354

No.	Part No.	Description	Remark
351	FB6+A-6735-050-A	Bearing Block Assy, Capstan	352
352	FB6+3-669-446-00	Nut, Guide, No.6	
353	FB6+3-681-448-00	Ring (C), Felt	
354	FB6+A-6050-209-A	DSH-37A-R	356, 355, 364
355	FB6+A-6762-154-A	Drum Assy, Rotary Upper (DSR-44-R)	
356	FB6+3-681-308-00	Bolt (C2 x 6), Hole, Hexagon	
357	FB6+3-681-628-00	Guide (S-2), Threading	
358	FB6+3-681-627-00	Guide (S-1), Threading	
359	♠: FB6+1-609-866-00	DM-4 Board	
360	FB6+8-835-099-01	Motor, DC (MNR-5003A) M902 (Drum)	
361	♠: FB6+3-681-577-00	Bracket, Drum Motor	
362	FB6+3-681-425-00	Pulley, Motor, Drum	
363	FB6+3-681-446-00	Belt, Drum	
364	FB6+3-681-314-03	Pulley	
365	♠: FB6+X-3681-425-0	Flywheel Assy	
366	FB6+3-681-444-00	Belt, Capstan	
367	♠: FB6+A-6740-081-A	Retainer Assy, Thrust	368
368	FB6+3-682-543-00	Retainer, Flywheel	
369	FB6+3-681-445-00	Belt, Relay	
370	FB6+3-682-740-01	Pulley (P), Midway	
	FB6+3-682-740-11	Pulley (P), Midway	
	FB6+3-682-740-21	Pulley (P), Midway	
	FB6+3-682-740-31	Pulley (P), Midway	
	FB6+3-682-740-41	Pulley (P), Midway	
	FB6+3-682-740-51	Pulley (P), Midway	
	FB6+3-682-740-61	Pulley (P), Midway	
	FB6+3-682-740-71	Pulley (P), Midway	
	FB6+3-682-740-81	Pulley (P), Midway	
371	FB6+X-3681-411-0	Pulley Assy, Relay	
372	FB6+1-806-682-00	Sensor, Dew Condensation	
373	FB6+3-669-465-00	Washer (1.5), Stopper	
374	♠: FB6+X-3681-443-0	Bearing Assy (P), Relay Pulley	
375	FB6+3-701-437-01	Washer	

9. ZOOM LENS ASSEMBLY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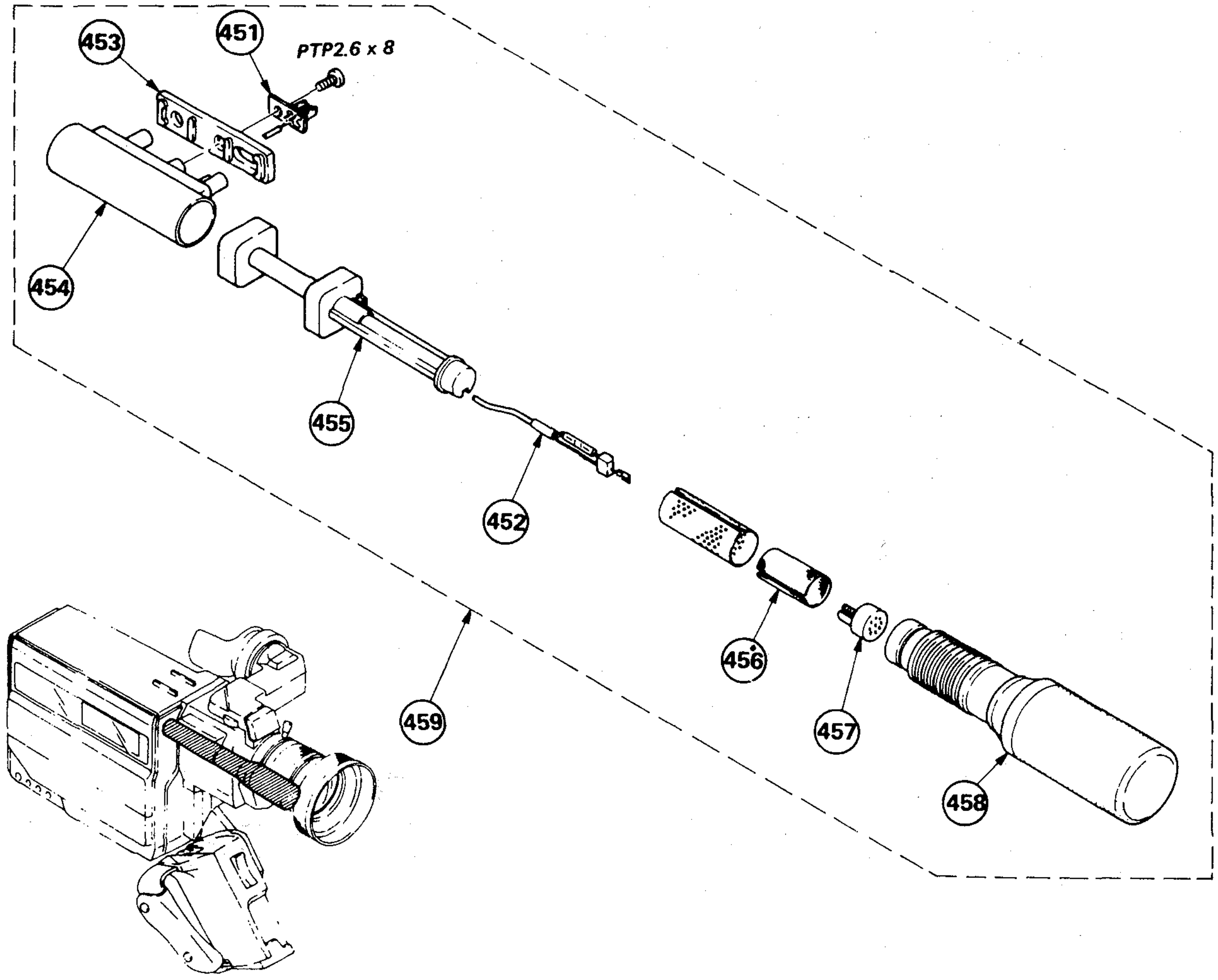
402
401
403
417
405
PS2.6 x 6
P2 x 2.5
P2 x 2.5
406
PS2.6 x 6
404
418
P2 x 2
P2.6 x 5
P2 x 3
419
P1.7 x 3.5
P1.7 x 1.8
410
411
412
P2 x 6
P2 x 5
413
P2 x 2.2
P2 x 3.5
409
407
P2 x 4
408
414
415
416

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
401	FB4+A-7613-052-A	Lens (VCL-906XA) Assy, Zoom	402-418	411	FB4+3-706-865-00	Motor Assy, Zoom	
402	FB4+3-706-869-00	Cup, Eye		412	FB4+3-706-861-00	Rubber, Vibration Proof	
403	FB4+3-706-868-00	Eyepiece Assy		413	♠: FB4+3-706-863-00	Bracket B, Z Motor	
404	♠: FB4+3-706-870-00	Claw, Rock		414	FB4+3-706-857-00	Knurl, Focus Rubber	
405	FB4+3-706-871-00	Screen Assy, LED		415	FB4+3-706-855-00	Hood	
406	FB4+3-706-859-00	Adjustment Piece, BF		416	FB4+3-706-856-00	Cap, Hood	
407	FB4+3-706-860-00	Belt, Z		417	FB4+3-681-824-11	Screw +P2X6	
408	FB4+3-706-864-00	Gear Assy, Zoom		418	FB4+3-681-824-01	Screw +P2X5	
409	FB4+3-706-858-00	Filter Assy, Iris		419	♠: FBP+1-610-553-00	FL-1 Board	
410	♠: FB4+3-706-862-00	Bracket A, Z Motor		420	FB4+3-681-823-00	Cover, Eyecup	

10. MICROPHONE ASSEMBLY



No.	Part No.	Description	Remark
451	♦: FB4+1-610-605-00	Translation Board	
452	FB4+X-2532-703-0	FET Assy	
453	FB4+2-532-723-00	Packing (A), Rubber	
454	FB4+2-532-726-00	Case, Microphone (Sanyo)	
455	♦: FB4+X-2532-705-0	Joint Assy	
456	♦: FB4+2-532-717-00	Mesh, Shield	
457	FB4+8-814-173-01	Microphone, Built-in (CU11-01)	
458	FB4+X-2532-704-0	Screen Assy, Window	
459	FB1+8-814-165-01	Microphone, Built-in (C-2003)	451-458

PA-1 **VC-2**

ELECTRICAL PARTS LIST

When indicating parts by reference number, please include the board name.

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

RESISTORS
- All resistors are in ohms
- F: nonflammable

COILS
- MMH: mH, UH: μH

CAPACITORS
- MF: μF, PF: μμF

Ref. No.	Part No.	Description	Remark
	♠: FBP+A-7511-947-A	PA-1 Board, Complete	
	♠: FBP+1-610-551-11	PA-1 Board	
		(CAPACITORS)	
C801	FBC+1-163-831-00	Ceramic Chip 0.047MF	10% 100V
C802	FBC+1-131-380-00	Tantalum 33MF	10% 10V
C803	FBC+1-124-222-00	Elect 22MF	20% 6.3V
C804	FBC+1-163-231-00	Ceramic Chip 15PF	5% 50V
C805	FBC+1-163-832-00	Ceramic Chip 0.1MF	10% 50V
C806	FBC+1-124-224-00	Elect 47MF	20% 6.3V
C807	FBC+1-124-255-00	Elect 1MF	20% 50V
C808	FBC+1-131-380-00	Tantalum 33MF	10% 10V
C809	FBC+1-163-125-00	Ceramic Chip 220PF	5% 50V
C810	FBC+1-124-224-00	Elect 47MF	20% 6.3V
C811	FBC+1-162-183-00	Ceramic 0.047MF	300V
C812	FBC+1-163-019-00	Ceramic Chip 0.0068MF	10% 50V
		(CONNECTOR)	
CN501	♠: FBO+1-557-032-00	Connector Assy (2.0mm) 5P	
CN502	♠: FBO+1-556-910-00	Connector Assy (2.0mm) 5P	
CN801	♠: FBO+1-564-016-00	Pin, Connector 6P	
CN802	♠: FBO+1-564-014-00	Pin, Connector 4P	
		(TRIMMER)	
CT801	FBO+1-141-245-00	Trimmer, Ceramic	
		(COIL)	
L801	FBL+1-408-939-00	Coil, Persevere (151μH)	
L802	FBL+1-408-948-00	Micro Inductor 220μH	
L803	FBL+1-408-948-00	Micro Inductor 220μH	
L804	FBL+1-408-948-00	Micro Inductor 220μH	
		(TRANSISTOR)	
Q801	FBQ+8-729-130-03	Transistor 2SK300	
Q802	FBQ+8-729-122-63	Transistor 2SA1266-E4	
Q803	FBQ+8-729-102-08	Transistor 2SC2223-F14	
Q804	FBQ+8-729-122-63	Transistor 2SA1226-E4	
Q805	FBQ+8-729-102-08	Transistor 2SC2223-F14	
Q806	FBQ+8-729-100-66	Transistor 2SC1623	
Q807	FBQ+8-729-102-66	Transistor 2SC1623	
Q808	FBQ+8-729-102-66	Transistor 2SC1623	
Q809	FBQ+8-729-100-66	Transistor 2SC1623	
Q810	FBQ+8-729-100-66	Transistor 2SC1623	
		(RESISTOR)	
R801	FBR+1-208-259-00	Res, Micro (High Mega Ohm) 10M	
R802	FBR+1-216-277-00	Metal Chip 2M	5% 1/8W
R803	FBR+1-216-038-00	Metal Chip 360	5% 1/10W
R804	FBR+1-216-053-00	Metal Chip 1.5K	5% 1/10W
R805	FBR+1-216-082-00	Metal Chip 24K	5% 1/10W
R806	FBR+1-216-082-00	Metal Chip 24K	5% 1/10W
R807	FBR+1-216-053-00	Metal Chip 1.5K	5% 1/10W
R808	FBR+1-216-025-00	Metal Chip 100	5% 1/10W
R809	FBR+1-216-056-00	Metal Chip 2K	5% 1/10W
R810	FBR+1-216-025-00	Metal Chip 100	5% 1/10W
R811	FBR+1-216-064-00	Metal Chip 4.3K	5% 1/10W
R812	FBR+1-216-097-00	Metal Chip 100K	5% 1/10W
R813	FBR+1-216-061-00	Metal Chip 3.3K	5% 1/10W
R814	FBR+1-216-036-00	Metal Chip 300	5% 1/10W
R815	FBR+1-216-057-00	Metal Chip 2.2K	5% 1/10W
R816	FBR+1-216-073-00	Metal Chip 10K	5% 1/10W
R817	FBR+1-216-073-00	Metal Chip 10K	5% 1/10W
R818	FBR+1-216-036-00	Metal Chip 300	5% 1/10W
R819	FBR+1-216-056-00	Metal Chip 2K	5% 1/10W
R820	FBR+1-216-066-00	Metal Chip 5.1K	5% 1/10W
R821	FBR+1-216-097-00	Metal Chip 100K	5% 1/10W
		(TRANSFORMER)	
T801	FBL+1-437-126-21	Transformer, Drive	
	♠: FBP+A-7513-003-A	VC-2 Board, Complete	
	♠: FB9+3-662-075-00	Cover, Control	
	♠: FB9+3-681-826-00	Case (Main), Shield, RA	
	♠: FB9+3-681-827-00	Lid, Shield Case, RA	
	♠: FB9+3-681-830-00	Case (Main), Shield, SG	
	♠: FB9+3-681-831-00	Lid, Shield Case, SG	
	♠: FB9+3-681-832-00	Sheet (A), Insulating, SG	
	FB9+3-681-834-00	Cushion, Rubber	
	FB9+9-911-839-xx	Cushion (2 x 2), Rubber	
		(PIN)	
BP501	♠: FBO+1-564-317-00	Pin, Board to Board 5P	
BP502	♠: FBO+1-564-318-00	Pin, Board to Board 10P	
BP503	♠: FBO+1-564-317-00	Pin, Board to Board 5P	
BP504	♠: FBO+1-564-318-00	Pin, Board to Board 10P	
		(CAPACITOR)	
C001	FBC+1-123-622-00	Elect 22MF	20% 16V
C017	FBC+1-163-124-00	Ceramic Chip 200PF	5% 50V
C018	FBC+1-163-080-00	Ceramic Chip 0.047MF	10% 25V
C019	FBC+1-163-021-00	Ceramic Chip 0.01MF	10% 50V
C020	FBC+1-163-080-00	Ceramic Chip 0.047MF	10% 25V
C021	FBC+1-123-645-00	Elect 33MF	20% 10V
C023	FBC+1-163-021-00	Ceramic Chip 0.01MF	10% 50V
C024	FBC+1-163-021-00	Ceramic Chip 0.01MF	10% 50V
C025	FBC+1-163-021-00	Ceramic Chip 0.01MF	10% 50V
C026	FBC+1-163-231-00	Ceramic Chip 15PF	5% 50V
C028	FBC+1-163-021-00	Ceramic Chip 0.01MF	10% 50V
C029	FBC+1-163-080-00	Ceramic Chip 0.047MF	10% 25V
C030	FBC+1-123-645-00	Elect 33MF	20% 10V

Ref. No.	Part No.	Description			Remark
C031	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C032	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C033	FBC+1-123-645-00	Elect	33MF	20%	10V
C034	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C035	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C036	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C037	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C038	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C039	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C040	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C041	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C042	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C043	FBC+1-124-231-00	Elect	4.7MF	20%	16V
C044	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C045	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C046	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C047	FBC+1-163-077-00	Ceramic Chip	0.1MF		50V
C048	FBC+1-123-822-00	Elect	47MF	20%	10V
C050	FBC+1-163-233-00	Ceramic Chip	18PF	5%	50V
C051	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C052	FBC+1-163-081-00	Ceramic Chip	0.022MF		25V
C053	FBC+1-163-081-00	Ceramic Chip	0.022MF		25V
C054	FBC+1-163-220-91	Ceramic Chip	3PF	0.25PF	50V
C055	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C056	FBC+1-163-103-00	Ceramic Chip	27PF	5%	50V
C057	FBC+1-163-013-00	Ceramic Chip	0.0022MF	10%	50V
C058	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C059	FBC+1-163-123-00	Ceramic Chip	180PF	5%	50V
C061	FBC+1-131-377-00	Tantalum	10MF	20%	10V
C063	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C151	FBC+1-163-229-00	Ceramic Chip	12PF	5%	50V
C152	FBC+1-163-077-00	Ceramic Chip	0.1MF		50V
C153	FBC+1-163-255-00	Ceramic Chip	150PF	5%	50V
C154	FBC+1-163-265-91	Ceramic Chip	390PF	5%	50V
C155	FBC+1-163-269-00	Ceramic Chip	560PF	5%	50V
C156	FBC+1-163-077-00	Ceramic Chip	0.1MF		50V
C157	FBC+1-163-077-00	Ceramic Chip	0.1MF		50V
C158	FBC+1-163-236-91	Ceramic Chip	24PF	5%	50V
C159	FBC+1-163-077-00	Ceramic Chip	0.1MF		50V
C160	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C161	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C162	FBC+1-163-077-00	Ceramic Chip	0.1MF		50V
C163	FBC+1-124-169-00	Elect	100MF	20%	10V
C501	FBC+1-131-380-00	Tantalum	33MF	10%	10V
C502	FBC+1-131-387-00	Tantalum	47MF	10%	6.3V
C503	FBC+1-124-233-00	Elect	10MF	20%	16V
C504	FBC+1-123-645-00	Elect	33MF	20%	10V
C505	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C506	FBC+1-123-647-00	Elect	47MF	20%	6.3V
C507	FBC+1-124-233-00	Elect	10MF	20%	16V
C508	FBC+1-163-117-00	Ceramic Chip	100PF	5%	50V
C509	FBC+1-123-647-00	Elect	47MF	20%	6.3V
C510	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C511	FBC+1-163-013-00	Ceramic Chip	0.0022MF	10%	50V
C512	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C513	FBC+1-123-647-00	Elect	47MF	20%	6.3V
C514	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C515	FBC+1-124-233-00	Elect	10MF	20%	16V
C516	FBC+1-123-822-00	Elect	47MF	20%	10V
C518	FBC+1-163-124-00	Ceramic Chip	200PF	5%	50V
C521	FBC+1-123-822-00	Elect	47MF	20%	10V
C523	FBC+1-124-233-00	Elect	10MF	20%	16V
C524	FBC+1-163-114-00	Ceramic Chip	75PF	5%	50V
C525	FBC+1-163-114-00	Ceramic Chip	75PF	5%	50V
C526	FBC+1-163-121-00	Ceramic Chip	150PF	5%	50V
C527	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C528	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C529	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C530	FBC+1-163-243-00	Ceramic Chip	47PF	5%	50V
C531	FBC+1-163-242-00	Ceramic Chip	43PF	5%	50V
C532	FBC+1-163-104-00	Ceramic Chip	30PF	5%	50V
C533	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C534	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C535	FBC+1-131-371-00	Tantalum	10MF	10%	16V
C536	FBC+1-123-645-00	Elect	33MF	20%	10V
C537	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C538	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C539	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C540	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C541	FBC+1-163-240-00	Ceramic Chip	36PF	5%	50V
C542	FBC+1-163-246-00	Ceramic Chip	62PF	5%	50V
C543	FBC+1-163-081-00	Ceramic Chip	0.22MF		25V
C544	FBC+1-163-081-00	Ceramic Chip	0.22MF		25V
C545	FBC+1-125-299-00	————————	47000MF		5V
C548	FBC+1-131-371-00	Tantalum	10MF	10%	16V
C549	FBC+1-131-371-00	Tantalum	10MF	10%	16V
C552	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C554	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C557	FBC+1-124-233-00	Elect	10MF	20%	16V
C558	FBC+1-163-123-00	Ceramic Chip	180PF	5%	50V
C559	FBC+1-130-476-00	Mylar	0.0027MF	5%	50V
C560	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C561	FBC+1-131-346-00	Tantalum	0.68MF	10%	35V
C562	FBC+1-123-622-00	Elect	22MF	20%	16V
C563	FBC+1-131-371-00	Tantalum	10MF	10%	16V
C564	FBC+1-124-233-00	Elect	10MF	20%	16V
C565	FBC+1-124-233-00	Elect	10MF	20%	16V
C566	FBC+1-131-408-00	Tantalum	1MF	10%	25V
C567	FBC+1-163-035-00	Ceramic Chip	0.047MF		50V
C568	FBC+1-123-647-00	Elect	47MF	20%	6.3V
C569	FBC+1-131-391-00	Tantalum	22MF	20%	3.15V
C570	FBC+1-124-169-00	Elect	100MF	20%	10V
C572	FBC+1-163-011-00	Ceramic Chip	0.0015MF	10%	50V
C573	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C574	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C575	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C576	FBC+1-123-661-00	Elect	100MF	20%	6.3V
C579	FBC+1-124-233-00	Elect	10MF	20%	16V
C583	FBC+1-124-233-00	Elect	10MF	20%	16V
C586	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C587	FBC+1-163-132-00	Ceramic Chip	430PF	5%	50V
C588	FBC+1-163-124-00	Ceramic Chip	200PF	5%	50V
C590	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C591	FBC+1-163-004-00	Ceramic Chip	390PF	10%	50V
C592	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C593	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C594	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C595	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C596	FBC+1-163-115-00	Ceramic Chip	82PF	5%	50V
C597	FBC+1-163-104-00	Ceramic Chip	30PF	5%	50V
C598	FBC+1-163-115-00	Ceramic Chip	82PF	5%	50V
C599	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C600	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C603	FBC+1-163-081-00	Ceramic Chip	0.22MF		25V
C652	FBC+1-163-126-00	Ceramic Chip	240PF	5%	50V
C660	FBC+1-123-617-00	Elect	10MF	20%	16V
C661	FBC+1-163-081-00	Ceramic Chip	0.22MF		25V
C662	FBC+1-124-233-00	Elect	10MF	20%	16V
C663	FBC+1-163-109-00	Ceramic Chip	47PF	5%	50V
C701	FBC+1-131-395-00	Tantalum	100MF	10%	3.15V
C702	FBC+1-163-019-00	Ceramic Chip	0.0068MF	10%	50V
C703	FBC+1-163-080-00	Ceramic Chip	0.0047MF	10%	25V

VC-2

Ref. No.	Part No.	Description			Remark
C704	FBC+1-123-622-00	Elect	22MF	20%	16V
C705	FBC+1-124-255-00	Elect	1MF	20%	50V
C706	FBC+1-124-243-11	Elect	2.2MF	20%	35V
C707	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C708	FBC+1-123-619-00	Elect	4.7MF	20%	50V
C709	FBC+1-123-367-00	Elect	2.2MF	20%	63V
C710	FBC+1-163-121-00	Ceramic Chip	150PF	5%	50V
C711	FBC+1-131-393-00	Tantalum	47MF	10%	3.15V
C712	FBC+1-123-380-00	Elect	1MF	20%	100V
C713	FBC+1-106-196-00	Mylar	0.01MF	5%	100V
C714	FBC+1-106-196-00	Mylar	0.01MF	5%	100V
C715	FBC+1-107-036-00	Mica	68PF	5%	500V
C716	FBC+1-107-036-00	Mica	68PF	5%	500V
C717	FBC+1-163-107-00	Ceramic Chip	39PF	5%	50V
C718	FBC+1-163-107-00	Ceramic Chip	39PF	5%	50V
C719	FBC+1-106-367-00	Mylar	0.01MF	5%	200V
C720	FBC+1-124-233-00	Elect	10MF	20%	16V
C721	FBC+1-108-427-00	Mylar	0.033MF	10%	200V
C722	FBC+1-108-427-00	Mylar	0.033MF	10%	200V
C723	FBC+1-108-425-00	Mylar	0.022MF	5%	200V
C724	FBC+1-123-647-00	Elect	47MF	20%	6.3V
C725	FBC+1-123-661-00	Elect	100MF	20%	6.3V
C727	FBC+1-123-647-00	Elect	47MF	20%	6.3V
C728	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C729	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C730	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C731	FBC+1-131-395-00	Tantalum	100MF	10%	3.15V
C732	FBC+1-131-387-00	Tantalum	47MF	10%	6.3V
C733	FBC+1-123-026-00	Elect	2.2MF		160V
C734	FBC+1-131-381-00	Tantalum	47MF	20%	10V
C735	FBC+1-131-388-00	Tantalum	68MF	20%	6.3V
C736	FBC+1-131-395-00	Tantalum	100MF	10%	3.15V
C738	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C741	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V
C742	FBC+1-163-831-00	Ceramic Chip	0.047MF	10%	100V
C852	FBC+1-163-109-00	Ceramic Chip	47PF	5%	50V
C853	FBC+1-163-230-00	Ceramic Chip	13PF	5%	50V
C858	FBC+1-163-109-00	Ceramic Chip	47PF	5%	50V
C859	FBC+1-163-109-00	Ceramic Chip	47PF	5%	50V
C860	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C861	FBC+1-163-109-00	Ceramic Chip	47PF	5%	50V
C863	FBC+1-163-109-00	Ceramic Chip	47PF	5%	50V
C871	FBC+1-124-140-00	Elect	220MF	20%	10V
C872	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V
C873	FBC+1-131-385-00	Tantalum	22MF	20%	6.3V
C874	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V
C875	FBC+1-131-341-00	Tantalum	0.1MF	20%	35V
		(CONNECTOR)			
CN001	♦: FBO+1-564-004-00	Pin, Connector 5P			
CN002	♦: FBO+1-564-005-00	Pin, Connector 6P			
CN501	♦: FBO+1-564-004-00	Pin, Connector 5P			
CN502	♦: FBO+1-564-004-00	Pin, Connector 5P			
CN503	♦: FBO+1-564-003-00	Pin, Connector 4P			
CN504	♦: FBO+1-564-001-11	Pin, Connector 2P			
CN505	♦: FBO+1-564-008-00	Pin, Connector 9P			
CN506	♦: FBO+1-564-004-00	Pin, Connector 5P			
CN507	♦: FBO+1-564-002-00	Pin, Connector 3P			
CN508	♦: FBO+1-564-001-11	Pin, Connector 2P			
CN509	♦: FBO+1-564-009-00	Pin, Connector 10P			
CN510	♦: FBO+1-564-187-00	Pin, Connector			
CN851	♦: FBO+1-564-002-00	Pin, Connector 3P			
		(TRIMMER)			
CT851	FBO+1-141-260-00	Trimmer, Ceramic 50PF			

Ref. No.	Part No.	Description	Remark
		(DIODE)	
D005	FBD+8-719-100-05	Diode 1S2837	
D006	FBD+8-719-100-03	Diode 1S2835	
D007	FBD+8-719-910-64	Diode HZ6B1L	
D151	FBD+8-719-101-23	Diode 1SS123	
D152	FBD+8-719-921-20	Diode 1SS119TD	
D153	FBD+8-719-101-23	Diode 1SS123	
D501	FBD+8-719-101-23	Diode 1SS123	
D502	FBD+8-719-100-05	Diode 1S2837	
D503	FBD+8-719-921-20	Diode 1SS119TD	
D504	FBD+8-719-101-23	Diode 1SS123	
D505	FBD+8-719-101-23	Diode 1SS123	
D506	FBD+8-719-100-03	Diode 1S2835	
D507	FBD+8-719-100-05	Diode 1S2837	
D508	FBD+8-719-100-03	Diode 1S2835	
D511	FBD+8-719-921-20	Diode 1SS119TD	
D514	=> FBD+8-719-100-15	Diode RD3.0EB-B2	
D515	FBD+8-719-921-20	Diode 1SS119TD	
D518	FBD+8-719-921-20	Diode 1SS119TD	
D519	FBD+8-719-100-03	Diode 1S2835	
D701	FBD+8-719-921-20	Diode 1SS119TD	
D704	FBD+8-719-921-20	Diode 1SS119TD	
D705	FBD+8-719-921-20	Diode 1SS119TD	
D706	=> FBD+8-719-106-18	Diode RD6.8M-B3	
D707	FBD+8-719-101-23	Diode 1SS123	
D851	⚠ FBD+8-719-154-51	Diode RD5.1E-L1	
		(DELAY LINE)	
DL501	FBX+1-415-329-00	Delay Line	
DL502	FBX+1-415-331-00	Delay Line	
DL503	FBX+1-415-349-00	Delay Line (1H)	
		(FILTER)	
FL501	FBL+1-235-234-00	Encapsulated Component	
		(CONVERTER)	
HV701	⚠ FBO+1-464-275-00	Converter Block, DC-DC	
		(IC)	
IC002	FBI+8-759-600-49	IC CX20004	
IC501	FBI+8-759-920-02	IC CX10002	
IC502	FBI+8-758-960-00	IC CX896	
IC505	FBI+8-758-160-00	IC CX816	
IC506	FBI+8-759-600-40	IC CX10041	
IC507	FBI+8-741-116-71	IC BX1167A	
IC509	FBI+8-759-906-39	IC CX20059	
IC510	FBI+8-759-700-45	IC NJM4556M-A	
IC701	FBI+8-741-117-10	IC BX1171	
IC702	FBI+8-741-117-10	IC BX1171	
IC703	FBI+8-759-100-96	IC UPC4558G2	
IC704	FBI+8-759-908-54	IC UPC4558G2	
IC851	FBI+8-759-908-54	IC CX7986	
IC852	FBI+8-759-100-96	IC UPC4558G2	
		(COIL)	
L002	FBL+1-408-620-00	Micro Inductor 150UH	
L003	FBL+1-408-609-00	Micro Inductor 33UH	
L004	FBL+1-408-410-00	Micro Inductor 12UH	
L007	FBL+1-406-067-00	Coil, RF	
L008	FBL+1-406-067-00	Coil, RF	
L151	FBL+1-408-422-00	Micro Inductor 120UH	
L152	FBL+1-408-408-00	Micro Inductor 8.2UH	
L502	FBL+1-408-602-00	Micro Inductor 8.2UH	
L503	FBL+1-408-936-00	Micro Inductor 6.8UH	
L504	FBL+1-407-927-00	Coil, VAR 10UH	
L505	FBL+1-408-021-00	Micro Inductor 150UH	

Ref. No.	Part No.	Description	Remark
L506	FBL+1-408-022-00	Micro Inductor 27UH	
L507	FBL+1-408-595-00	Micro Inductor 2.2UH	
L508	FBL+1-408-936-00	Micro Inductor 6.8UH	
L509	FBL+1-408-462-11	Micro Inductor 470UH	
L510	FBL+1-408-462-11	Micro Inductor 470UH	
L512	FBL+1-421-421-00	Coil, Choke 100UH	
L513	FBL+1-408-618-00	Micro Inductor 180UH	
L514	FBL+1-408-622-00	Micro Inductor 390UH	
L515	FBL+1-408-990-00	Micro Inductor 120UH	
L651	FBL+1-408-613-00	Micro Inductor 68UH	
L854	FBL+1-408-956-00	Coil, Choke	
		(TRANSISTOR)	
Q001	FBQ+8-729-100-66	Transistor 2SC1623	
Q002	FBQ+8-729-100-66	Transistor 2SC1623	
Q003	FBQ+8-729-312-22	Transistor 2SA1122	
Q014	FBQ+8-729-102-08	Transistor 2SC2223-F14	
Q016	FBQ+8-729-122-63	Transistor 2SA1226-E4	
Q017	FBQ+8-729-122-63	Transistor 2SA1226-E4	
Q018	FBQ+8-729-312-22	Transistor 2SA1122	
Q019	FBQ+8-729-100-66	Transistor 2SC1623	
Q020	FBQ+8-729-100-76	Transistor 2SA812	
Q021	FBQ+8-729-100-66	Transistor 2SC1623	
Q022	FBQ+8-729-100-66	Transistor 2SC1623	
Q023	FBQ+8-729-100-66	Transistor 2SC1623	
Q024	FBQ+8-729-100-66	Transistor 2SC1623	
Q025	FBQ+8-729-100-66	Transistor 2SC1623	
Q026	FBQ+8-729-100-66	Transistor 2SC1623	
Q027	FBQ+8-729-100-66	Transistor 2SC1623	
Q028	FBQ+8-729-100-66	Transistor 2SC1623	
Q029	FBQ+8-729-101-25	Transistor 2SC1009A	
Q030	FBQ+8-729-101-25	Transistor 2SC1009A	
Q031	FBQ+8-729-101-25	Transistor 2SC1009A	
Q032	FBQ+8-729-101-25	Transistor 2SC1009A	
Q033	FBQ+8-729-101-25	Transistor 2SC1009A	
Q034	FBQ+8-729-100-76	Transistor 2SA812	
Q035	FBQ+8-729-100-76	Transistor 2SA812	
Q036	FBQ+8-729-100-66	Transistor 2SC1623	
Q037	FBQ+8-729-100-66	Transistor 2SC1623	
Q151	FBQ+8-729-100-76	Transistor 2SA812	
Q152	FBQ+8-729-100-66	Transistor 2SC1623	
Q153	FBQ+8-729-100-66	Transistor 2SC1623	
Q154	FBQ+8-729-100-76	Transistor 2SA812	
Q155	FBQ+8-729-100-66	Transistor 2SC1623	
Q156	FBQ+8-729-271-23	Transistor 2SC2712	
Q157	FBQ+8-729-100-66	Transistor 2SC1623	
Q158	FBQ+8-729-312-22	Transistor 2SA1122	
Q159	FBQ+8-729-100-66	Transistor 2SC1623	
Q160	FBQ+8-729-100-66	Transistor 2SC1623	
Q161	FBQ+8-729-100-76	Transistor 2SA812	
Q501	FBQ+8-729-100-66	Transistor 2SC1623	
Q502	FBQ+8-729-100-66	Transistor 2SC1623	
Q503	FBQ+8-729-122-63	Transistor 2SA1226-T2E4	
Q504	FBQ+8-729-100-76	Transistor 2SA812	
Q505	FBQ+8-729-100-76	Transistor 2SA812	
Q506	FBQ+8-729-100-66	Transistor 2SC1623	
Q507	FBQ+8-729-100-66	Transistor 2SC1623	
Q509	FBQ+8-729-100-66	Transistor 2SC1623	
Q510	FBQ+8-729-100-66	Transistor 2SC1623	
Q511	FBQ+8-729-100-66	Transistor 2SC1623	
Q512	FBQ+8-729-100-66	Transistor 2SC1623	
Q515	FBQ+8-729-102-76	Transistor 2SA812-T2M6	
Q516	FBQ+8-729-100-76	Transistor 2SA812	
Q517	=> FBQ+8-729-220-92	Transistor 2SK209Y	
Q518	=> FBQ+8-729-220-92	Transistor 2SK209Y	

Ref. No.	Part No.	Description	Remark
Q519	FBQ+8-729-100-76	Transistor 2SA812	
Q520	FBQ+8-729-100-76	Transistor 2SA812	
Q521	FBQ+8-729-100-76	Transistor 2SA812	
Q522	FBQ+8-729-100-66	Transistor 2SC1623	
Q523	FBQ+8-729-100-66	Transistor 2SC1623	
Q524	FBQ+8-729-100-76	Transistor 2SA812	
Q527	FBQ+8-729-100-66	Transistor 2SC1623	
Q528	FBQ+8-729-100-66	Transistor 2SC1623	
Q529	FBQ+8-729-102-26	Transistor 2SC1623-T2L6	
Q530	FBQ+8-729-100-66	Transistor 2SC1623	
Q531	FBQ+8-729-102-26	Transistor 2SC1623-T2L6	
Q652	FBQ+8-729-202-57	Transistor 2SC3381	
Q701	FBQ+8-729-100-66	Transistor 2SC1623	
Q702	FBQ+8-729-100-66	Transistor 2SC1623	
Q703	⚠ FBQ+8-729-104-08	Transistor 2SD999	
Q704	FBQ+8-729-100-76	Transistor 2SA812	
Q705	⚠ FBQ+8-729-104-02	Transistor 2SB798	
Q706	FBQ+8-729-100-66	Transistor 2SC1623	
Q707	FBQ+8-729-100-66	Transistor 2SC1623	
Q708	FBQ+8-729-271-32	Transistor 2SC2713	
Q710	FBQ+8-729-271-32	Transistor 2SC2713	
Q711	FBQ+8-729-216-32	Transistor 2SA1163	
Q712	⚠ FBQ+8-729-104-02	Transistor 2SB798	
Q713	FBQ+8-729-100-66	Transistor 2SC1623	
Q714	FBQ+8-729-100-66	Transistor 2SC1623	
Q715	FBQ+8-729-100-76	Transistor 2SA812	
Q716	FBQ+8-729-200-17	Transistor 2SA1091	
Q717	FBQ+8-729-271-32	Transistor 2SC2713	
Q718	FBQ+8-729-271-32	Transistor 2SC2713	
Q719	FBQ+8-729-271-32	Transistor 2SC2713	
Q720	FBQ+8-729-216-32	Transistor 2SA1163	
Q852	⚠ FBQ+8-729-100-26	Transistor 2SC1623	
		(RESISTOR)	
R001	FBR+1-216-113-00	Metal Chip 470K 5% 1/10W	
R003	FBR+1-216-053-00	Metal Chip 1.5K 5% 1/10W	
R004	FBR+1-216-067-00	Metal Chip 5.6K 5% 1/10W	
R005	FBR+1-216-070-00	Metal Chip 7.5K 5% 1/10W	
R006	FBR+1-216-049-00	Metal Chip 1K 5% 1/10W	
R012	FBR+1-216-025-00	Metal Chip 100 5% 1/10W	
R013	FBR+1-216-018-00	Metal Chip 51 5% 1/10W	
R029	FBR+1-216-086-00	Metal Chip 36K 5% 1/10W	
R042	FBR+1-216-065-00	Metal Chip 4.7K 5% 1/10W	
R043	FBR+1-216-040-00	Metal Chip 430 5% 1/10W	
R044	FBR+1-216-049-00	Metal Chip 1K 5% 1/10W	
R045	FBR+1-216-046-00	Metal Chip 750 5% 1/10W	
R046	FBR+1-216-092-00	Metal Chip 62K 5% 1/10W	
R047	FBR+1-216-024-00	Metal Chip 91 5% 1/10W	
R048	FBR+1-216-049-00	Metal Chip 1K 5% 1/10	
R049	FBR+1-216-083-00	Metal Chip 27K 5% 1/10W	
R050	FBR+1-216-057-00	Metal Chip 2.2K 5% 1/10W	
R051	FBR+1-216-085-00	Metal Chip 33K 5% 1/10W	
R052	FBR+1-216-082-00	Metal Chip 24K 5% 1/10W	
R053	FBR+1-216-051-00	Metal Chip 1.2K 5% 1/10W	
R054	FBR+1-216-061-00	Metal Chip 3.3K 5% 1/10W	
R055	FBR+1-216-075-00	Metal Chip 12K 5% 1/10W	
R056	FBR+1-216-049-00	Metal Chip 1K 5% 1/10W	
R057	FBR+1-216-089-00	Metal Chip 47K 5% 1/10W	
R058	FBR+1-216-029-00	Metal Chip 150 5% 1/10W	
R059	FBR+1-215-389-00	Metal 47 1% 1/6W	
R060	FBR+1-216-032-00	Metal Chip 200 5% 1/10W	
R061	FBR+1-216-081-00	Metal Chip 22K 5% 1/10W	
R062	FBR+1-216-049-00	Metal Chip 1K 5% 1/10W	
R063	FBR+1-216-313-00	Metal Chip 8.2 5% 1/10W	
R064	FBR+1-216-089-00	Metal Chip 47K 5% 1/10W	

VC-2

Ref. No.	Part No.	Description			Remark
R065	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R066	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R067	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R068	FBR+1-216-063-00	Metal Chip	3.9K	5%	1/10W
R069	FBR+1-216-066-00	Metal Chip	5.1K	5%	1/10W
R070	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R071	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R072	FBR+1-216-043-00	Metal Chip	560	5%	1/10W
R073	FBR+1-216-043-00	Metal Chip	560	5%	1/10W
R074	FBR+1-216-066-00	Metal Chip	5.1K	5%	1/10W
R075	FBR+1-216-063-00	Metal Chip	3.9K	5%	1/10W
R076	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R077	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R078	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R079	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R080	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R081	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R082	FBR+1-216-001-00	Metal Chip	10	5%	1/10W
R083	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R084	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R085	FBR+1-216-079-00	Metal Chip	18K	5%	1/10W
R086	FBR+1-216-093-00	Metal Chip	68K	5%	1/10W
R087	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R088	FBR+1-216-042-00	Metal Chip	510	5%	1/10W
R089	FBR+1-216-029-00	Metal Chip	150	5%	1/10W
R090	FBR+1-216-303-91	Metal Chip	3	5%	1/10W
R091	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R092	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R093	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R094	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R095	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R096	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R097	FBR+1-216-069-00	Metal Chip	6.8K	5%	1/10W
R098	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R099	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R100	FBR+1-216-101-00	Metal Chip	150K	5%	1/10W
R101	FBR+1-216-087-00	Metal Chip	39K	5%	1/10W
R102	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R103	FBR+1-216-087-00	Metal Chip	39K	5%	1/10W
R104	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R105	FBR+1-216-060-00	Metal Chip	3K	5%	1/10W
R106	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R107	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R108	FBR+1-216-063-00	Metal Chip	3.9K	5%	1/10W
R109	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R110	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R111	FBR+1-216-075-00	Metal Chip	12K	5%	1/10W
R112	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R113	FBR+1-216-025-00	Metal Chip	100	5%	1/10W
R114	FBR+1-216-060-00	Metal Chip	3K	5%	1/10W
R115	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R116	FBR+1-216-035-00	Metal Chip	270	5%	1/10W
R117	FBR+1-216-035-00	Metal Chip	270	5%	1/10W
R118	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R152	FBR+1-216-058-00	Metal Chip	2.4K	5%	1/10W
R153	FBR+1-216-056-00	Metal Chip	2K	5%	1/10W
R154	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R155	FBR+1-216-052-00	Metal Chip	1.3K	5%	1/10W
R156	FBR+1-216-036-00	Metal Chip	300	5%	1/10W
R157	FBR+1-216-051-00	Metal Chip	1.2K	5%	1/10W
R158	FBR+1-216-034-00	Metal Chip	240	5%	1/10W
R159	FBR+1-216-032-00	Metal Chip	200	5%	1/10W
R160	FBR+1-216-059-00	Metal Chip	2.7K	5%	1/10W
R161	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R162	FBR+1-216-067-00	Metal Chip	5.6K	5%	1/10W
R163	FBR+1-216-054-00	Metal Chip	1.6K	5%	1/10W
R164	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R165	FBR+1-216-043-00	Metal Chip	560	5%	1/10W
R166	FBR+1-216-050-00	Metal Chip	1.1K	5%	1/10W
R167	FBR+1-216-031-00	Metal Chip	180	5%	1/10W
R168	FBR+1-216-027-00	Metal Chip	120	5%	1/10W
R169	FBR+1-216-052-00	Metal Chip	1.3K	5%	1/10W
R170	FBR+1-216-070-00	Metal Chip	7.5K	5%	1/10W
R171	FBR+1-216-042-00	Metal Chip	510	5%	1/10W
R172	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R173	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R174	FBR+1-216-047-00	Metal Chip	820	5%	1/10W
R175	FBR+1-216-042-00	Metal Chip	510	5%	1/10W
R176	FBR+1-216-041-00	Metal Chip	470	5%	1/10W
R177	FBR+1-216-080-00	Metal Chip	20K	5%	1/10W
R178	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R179	FBR+1-216-044-00	Metal Chip	620	5%	1/10W
R180	FBR+1-216-047-00	Metal Chip	820	5%	1/10W
R181	FBR+1-216-074-00	Metal Chip	11K	5%	1/10W
R182	FBR+1-216-060-00	Metal Chip	3K	5%	1/10W
R183	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R184	FBR+1-216-060-00	Metal Chip	3K	5%	1/10W
R185	FBR+1-216-025-00	Metal Chip	100	5%	1/10W
R186	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R187	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R188	FBR+1-216-096-00	Metal Chip	91K	5%	1/10W
R501	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R502	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R503	FBR+1-216-038-00	Metal Chip	360	5%	1/10W
R504	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R505	FBR+1-216-121-00	Metal Chip	1M	5%	1/10W
R506	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R507	FBR+1-216-053-00	Metal Chip	1.5K	5%	1/10W
R508	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R509	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R510	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R511	FBR+1-216-094-00	Metal Chip	75K	5%	1/10W
R512	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R513	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R514	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R515	FBR+1-216-295-00	Metal Chip	0	5%	1/10W
R516	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R517	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R518	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R519	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R520	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R521	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R522	FBR+1-216-070-00	Metal Chip	7.5K	5%	1/10W
R523	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R524	FBR+1-216-079-00	Metal Chip	18K	5%	1/10W
R525	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R526	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R527	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R528	FBR+1-216-067-00	Metal Chip	5.6K	5%	1/10W
R529	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R530	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R531	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R532	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R533	FBR+1-216-077-00	Metal Chip	15K	5%	1/10W
R534	FBR+1-216-066-00	Metal Chip	5.1K	5%	1/10W
R535	FBR+1-216-051-00	Metal Chip	1.2K	5%	1/10W
R536	FBR+1-216-041-00	Metal Chip	470	5%	1/10W
R543	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R546	FBR+1-216-077-00	Metal Chip	15K	5%	1/10W
R547	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R548	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R549	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R550	FBR+1-216-041-00	Metal Chip	470	5%	1/10W
R551	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R552	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R553	FBR+1-216-031-00	Metal Chip	180	5%	1/10W
R554	FBR+1-216-048-00	Metal Chip	910	5%	1/10W
R555	FBR+1-216-048-00	Metal Chip	910	5%	1/10W
R556	FBR+1-216-024-00	Metal Chip	91	5%	1/10W
R557	FBR+1-216-024-00	Metal Chip	91	5%	1/10W
R558	FBR+1-216-053-00	Metal Chip	1.5K	5%	1/10W
R560	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R561	FBR+1-216-046-00	Metal Chip	750	5%	1/10W
R562	FBR+1-216-034-00	Metal Chip	240	5%	1/10W
R563	FBR+1-216-034-00	Metal Chip	240	5%	1/10W
R564	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R565	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R566	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R567	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R568	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R569	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R570	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R571	FBR+1-216-053-00	Metal Chip	1.5K	5%	1/10W
R572	FBR+1-216-062-00	Metal Chip	3.6K	5%	1/10W
R573	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R574	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R575	FBR+1-216-015-00	Metal Chip	39	5%	1/10W
R576	FBR+1-216-015-00	Metal Chip	39	5%	1/10W
R577	FBR+1-216-067-00	Metal Chip	5.6K	5%	1/10W
R582	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R583	FBR+1-216-033-00	Metal Chip	220	5%	1/10W
R584	FBR+1-216-033-00	Metal Chip	220	5%	1/10W
R585	FBR+1-216-067-00	Metal Chip	5.6K	5%	1/10W
R588	FBR+1-216-121-00	Metal Chip	1M	5%	1/10W
R591	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R592	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R593	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R594	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R595	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R596	FBR+1-216-076-00	Metal Chip	13K	5%	1/10W
R597	FBR+1-216-056-00	Metal Chip	2K	5%	1/10W
R598	FBR+1-216-079-00	Metal Chip	18K	5%	1/10W
R599	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R600	FBR+1-216-088-00	Metal Chip	43K	5%	1/10W
R601	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R602	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R603	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W
R604	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W
R605	FBR+1-216-114-00	Metal Chip	510K	5%	1/10W
R606	FBR+1-216-114-00	Metal Chip	510K	5%	1/10W
R607	FBR+1-216-111-00	Metal Chip	390K	5%	1/10W
R608	FBR+1-216-077-00	Metal Chip	15K	5%	1/10W
R609	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W
R610	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R611	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R612	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R613	FBR+1-216-056-00	Metal Chip	2K	5%	1/10W
R614	FBR+1-216-009-00	Metal Chip	22	5%	1/10W
R615	FBR+1-216-114-00	Metal Chip	510K	5%	1/10W
R616	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R617	FBR+1-216-075-00	Metal Chip	12K	5%	1/10W
R619	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R620	FBR+1-216-308-00	Metal Chip	4.7	5%	1/10W
R621	FBR+1-216-051-00	Metal Chip	1.2K	5%	1/10W
R622	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R623	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R624	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R625	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R626	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R627	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R628	FBR+1-216-103-00	Metal Chip	180K	5%	1/10W
R630	FBR+1-216-067-00	Metal Chip	5.6K	5%	1/10W
R631	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R632	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R633	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R634	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R635	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R636	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R637	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R638	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R639	FBR+1-216-039-00	Metal Chip	390	5%	1/10W
R640	FBR+1-216-060-00	Metal Chip	3K	5%	1/10W
R641	FBR+1-216-079-00	Metal Chip	18K	5%	1/10W
R642	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R643	FBR+1-216-078-00	Metal Chip	16K	5%	1/10W
R644	FBR+1-216-088-00	Metal Chip	43K	5%	1/10W
R645	FBR+1-216-030-00	Metal Chip	160	5%	1/10W
R646	FBR+1-216-030-00	Metal Chip	160	5%	1/10W
R647	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R648	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R649	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R650	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R652	FBR+1-216-051-00	Metal Chip	1.2K	5%	1/10W
R663	FBR+1-216-070-00	Metal Chip	7.5K	5%	1/10W
R664	FBR+1-216-050-00	Metal Chip	1.1K	5%	1/10W
R666	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R667	⚠ FBR+1-532-685-00	Link, IC (ICP-N20)			
R670	FBR+1-216-068-00	Metal Chip	6.2K	5%	1/10W
R671	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R672	FBR+1-216-053-00	Metal Chip	1.5K	5%	1/10W
R673	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R677	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R678	FBR+1-216-042-00	Metal Chip	510	5%	1/10W
R679	FBR+1-216-042-00	Metal Chip	510	5%	1/10W
R680	FBR+1-216-042-00	Metal Chip	510	5%	1/10W
R701	FBR+1-216-071-00	Metal Chip	8.2K	5%	1/10W
R702	FBR+1-216-051-00	Metal Chip	1.2K	5%	1/10W
R703	FBR+1-216-051-00	Metal Chip	1.2K	5%	1/10W
R704	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R705	FBR+1-215-465-00	Metal	68K	1%	1/6W
R706	FBR+1-215-425-00	Metal	1.5K	1%	1/6W
R707	FBR+1-215-658-00	Metal	1.5	1%	1/6W
R708	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R709	FBR+1-216-041-00	Metal Chip	470	5%	1/10W
R710	FBR+1-215-451-00	Metal	18K	1%	1/6W
R711	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R712	FBR+1-216-105-00	Metal Chip	220K	5%	1/10W
R713	FBR+1-216-082-00	Metal Chip	24K	5%	1/10W
R714	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R715	FBR+1-216-066-00	Metal Chip	5.1K	5%	1/10W
R716	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R717	FBR+1-216-067-00	Metal Chip	5.6K	5%	1/10W
R719	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R720	FBR+1-216-113-00	Metal Chip	470K	5%	1/10W
R721	FBR+1-216-077-00	Metal Chip	15K	5%	1/10W
R722	FBR+1-216-101-00	Metal Chip	150K	5%	1/10W
R723	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R724	FBR+1-216-095-00	Metal Chip	82K	5%	1/10W
R725	FBR+1-216-109-00	Metal Chip	330K	5%	1/10W
R726	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R727	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R728	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R729	FBR+1-215-446-00	Metal	11K	1%	1/6W
R730	FBR+1-214-996-00	Metal	0.47	1%	1/4W

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Ref. No.	Part No.	Description			Remark
R731	FBR+1-216-121-00	Metal Chip	1M	5%	1/10W
R732	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R733	FBR+1-214-970-00	Metal	1.8M	1%	1/4W
R734	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R735	FBR+1-214-961-00	Metal	750K	1%	1/4W
R736	FBR+1-215-474-00	Metal	160K	1%	1/6W
R737	FBR+1-216-069-00	Metal Chip	6.8K	5%	1/10W
R738	FBR+1-216-069-00	Metal Chip	6.8K	5%	1/10W
R739	FBR+1-216-037-00	Metal Chip	330	5%	1/10W
R740	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R741	FBR+1-216-063-00	Metal Chip	3.9K	5%	1/10W
R742	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R743	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R744	FBR+1-214-963-00	Metal	910K	1%	1/4W
R745	FBR+1-215-461-00	Metal	47K	1%	1/6W
R746	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R747	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R748	FBR+1-216-037-00	Metal Chip	330	5%	1/10W
R749	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R750	FBR+1-216-063-00	Metal Chip	3.9K	5%	1/10W
R752	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R753	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R754	FBR+1-216-105-00	Metal Chip	220K	5%	1/10W
R755	FBR+1-216-119-00	Metal Chip	820K	5%	1/10W
R756	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W
R757	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R758	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R759	FBR+1-215-469-00	Metal	100K	1%	1/6W
R760	FBR+1-214-953-00	Metal	360K	1%	1/4W
R762	FBR+1-215-453-00	Metal	22K	1%	1/6W
R763	FBR+1-215-414-00	Metal	510	1%	1/6W
R764	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R765	FBR+1-216-113-00	Metal Chip	470K	5%	1/10W
R766	FBR+1-216-095-00	Metal Chip	82K	5%	1/10W
R767	FBR+1-214-966-00	Metal	1.2M	1%	1/4W
R831	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R851	FBR+1-216-121-00	Metal Chip	1M	5%	1/10W
R852	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R855	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R856	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R857	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R859	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R865	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R866	FBR+1-216-041-00	Metal Chip	470	5%	1/10W
R867	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R871	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R872	FBR+1-216-043-00	Metal Chip	560	5%	1/10W
R873	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R874	FBR+1-215-430-00	Metal	2.4K	1%	1/6W
R875	FBR+1-215-439-00	Metal	5.6K	1%	1/6W
R876	⚠ FBR+1-532-637-00	Link, IC (ICP-N25)			
		(VARIABLE RESISTOR)			
RV007	FBR+1-226-702-00	Res, Adj, Metal Glaze 2.2K			
RV008	FBR+1-226-771-00	Res, Adj, Metal Glaze 1K			
RV151	FBR+1-226-776-00	Res, Adj, Metal Glaze 220K			
RV152	FBR+1-226-773-00	Res, Adj, Metal Glaze 22K			
RV153	FBR+1-226-773-00	Res, Adj. Metal Glaze 22K			
RV154	FBR+1-226-774-00	Res, Adj, Metal Glaze 47K			
RV155	FBR+1-226-774-00	Res, Adj, Metal Glaze 47K			
RV156	FBR+1-226-770-00	Res, Adj, Metal Glaze 470			
RV501	FBR+1-226-753-00	Res, Adj, Solid 47K			
RV502	FBR+1-226-710-00	Res, Adj, Solid 10K			
RV503	FBR+1-226-711-00	Res, Adj, Solid 22K			
RV504	FBR+1-226-709-00	Res, Adj, Solid 4.7K			
RV505	FBR+1-226-710-00	Res, Adj, Solid 10K			
RV506	FBR+1-226-710-00	Res, Adj, Solid 10K			
RV507	FBR+1-226-709-00	Res, Adj, Solid 4.7K			
RV508	FBR+1-226-706-00	Res, Adj, Solid 470			
RV509	FBR+1-226-707-00	Res, Adj, Solid 1K			
RV510	FBR+1-226-709-00	Res, Adj, Solid 4.7K			
RV511	FBR+1-226-753-00	Res, Adj, Solid 47K			
RV512	FBR+1-226-753-00	Res, Adj, Solid 47K			
RV513	FBR+1-226-710-00	Res, Adj, Solid 10K			
RV514	FBR+1-226-710-00	Res, Adj, Solid 10K			
RV515	FBR+1-226-711-00	Res, Adj, Solid 22K			
RV516	FBR+1-226-702-00	Res, Adj, Metal Glaze 2.2K			
RV517	FBR+1-226-702-00	Res, Adj, Metal Glaze 2.2K			
RV518	FBR+1-226-702-00	Res, Adj, Metal Glaze 2.2K			
RV519	FBR+1-226-702-00	Res, Adj, Metal Glaze 2.2K			
RV521	FBR+1-226-709-00	Res, Adj, Solid 4.7K			
RV522	FBR+1-226-709-00	Res, Adj, Solid 4.7K			
RV523	FBR+1-226-709-00	Res, Adj, Solid 4.7K			
RV524	FBR+1-226-711-00	Res, Adj, Solid 22K			
RV525	FBR+1-226-711-00	Res, Adj, Solid 22K			
RV526	FBR+1-226-708-00	Res, Adj, Solid 2.2K			
RV701	FBR+1-226-770-00	Res, Adj, Metal Glaze 470			
RV702	FBR+1-226-715-00	Res, Adj, Solid 470K			
RV703	FBR+1-226-769-00	Res, Adj, Metal Glaze 100			
RV704	FBR+1-226-753-00	Res, Adj, Solid 47K			
RV705	FBR+1-226-701-00	Res, Adj, Metal Glaze 220			
RV706	FBR+1-226-777-00	Res, Adj, Metal Glaze 1M			
RV707	FBR+1-226-704-00	Res, Adj, Metal Glaze 470K			
RV708	FBR+1-226-703-00	Res, Adj, Metal Glaze 10K			
RV709	FBR+1-226-776-00	Res, Adj, Metal Glaze 220K			
RV710	FBR+1-226-704-00	Res, Adj, Metal Glaze 470K			
RV711	FBR+1-226-703-00	Res, Adj, Metal Glaze 10K			
RV712	FBR+1-226-704-00	Res, Adj, Metal Glaze 470K			
RV851	FBR+1-226-771-00	Res, Adj, Metal Glaze 1K			
		(SR BLOCK)			
SR701	⚠FBO+1-464-276-00	SR Block			
		(TRANSFORMER)			
T701	FBL+1-433-260-00	Transformer, Coupling (H)			
T702	FBL+1-433-261-00	Transformer, Coupling (V)			
		(CRYSTAL)			
X651	FBX+1-567-158-00	Vibrator, Crystal			

Ref. No.	Part No.	Description			Remark
	♦: FBP+A-7513-005-A	GC-3 Board Complete			
		(CAPACITOR)			
C657	FBC+1-163-019-00	Ceramic Chip	0.0068MF	10%	50V
C658	FBC+1-163-222-00	Ceramic Chip	5PF	0.25PF	50V
C659	FBC+1-163-235-00	Ceramic Chip	22PF	5%	50V
C665	FBC+1-124-254-00	Elect	0.68MF	20%	50V
C851	FBC+1-131-387-00	Tantalum	47MF	10%	6.3V
C855	FBC+1-163-259-00	Ceramic Chip	220PF	5%	50V
C856	FBC+1-163-259-00	Ceramic Chip	220PF	5%	50V
		(TRIMMER)			
CT651	FBO+1-141-246-00	CAP, Trimmer			
		(DIODE)			
D651	FBD+8-712-500-00	Diode 1T25			
D852	FBD+8-719-105-90	Diode RD5.6M-B1			
		(IC)			
IC651	FBI+8-759-193-58	IC UPC358G			

Ref. No.	Part No.	Description	Remark
		(COIL)	
L851	FBL+1-408-429-00	Micro Inductor 470UH	
L852	FBL+1-408-613-00	Micro Inductor 68UH	
L853	FBL+1-408-613-00	Micro Inductor 68UH	
		(RESISTOR)	
R657	FBR+1-216-067-00	Metal Chip 5.6K 5% 1/10W	
R658	FBR+1-216-073-00	Metal Chip 10K 5% 1/10W	
R659	FBR+1-216-113-00	Metal Chip 470K 5% 1/10W	
R660	FBR+1-216-044-00	Metal Chip 620 5% 1/10W	
R661	FBR+1-216-073-00	Metal Chip 10K 5% 1/10W	
R662	FBR+1-216-121-00	Metal Chip 1M 5% 1/10W	
R665	FBR+1-216-044-00	Metal Chip 620 5% 1/10W	
R668	FBR+1-216-047-00	Metal Chip 820 5% 1/10W	
R669	FBR+1-216-047-00	Metal Chip 820 5% 1/10W	
R853	FBR+1-216-050-00	Metal Chip 1.1K 5% 1/10W	
R854	FBR+1-216-050-00	Metal Chip 1.1K 5% 1/10W	
R860	FBR+1-216-035-00	Metal Chip 270 5% 1/10W	
R861	FBR+1-216-035-00	Metal Chip 270 5% 1/10W	
		(CRYSTAL)	
X652	FBX+1-567-157-00	Vibrator, Crystal	
	♦: FBP+1-611-417-00	GC-4 Board	
		(CAPACITOR)	
C546	FBC+1-124-233-00	Elect 10MF 20% 16V	
C547	FBC+1-124-233-00	Elect 10MF 20% 16V	
C550	FBC+1-163-080-00	Ceramic Chip 0.047MF 10% 25V	
C551	FBC+1-163-021-00	Ceramic Chip 0.01MF 10% 50V	
C555	FBC+1-163-021-00	Ceramic Chip 0.01MF 10% 50V	
		(IC)	
IC508	FBI+8-759-906-59	IC CX22017	
		(TRANSISTOR)	
Q513	FBQ+8-729-100-66	Transistor 2SC1623	
Q514	FBQ+8-729-100-66	Transistor 2SC1623	
		(RESISTOR)	
R578	FBR+1-216-073-00	Metal Chip 10K 5% 1/10W	
R579	FBR+1-216-073-00	Metal Chip 10K 5% 1/10W	
R580	FBR+1-216-073-00	Metal Chip 10K 5% 1/10W	
R581	FBR+1-216-073-00	Metal Chip 10K 5% 1/10W	
R586	FBR+1-216-089-00	Metal Chip 47K 5% 1/10W	
R589	FBR+1-216-061-00	Metal Chip 3.3K 5% 1/10W	
R618	FBR+1-216-067-00	Metal Chip 5.6K 5% 1/10W	
	♦: FBP+1-611-418-00	GC-5 Board	
		(CAPACITOR)	
C517	FBC+1-124-233-00	Elect 10MF 20% 16V	
C519	FBC+1-123-822-00	Elect 47MF 20% 10V	
C520	FBC+1-124-231-00	Elect 4.7MF 20% 16V	
C522	FBC+1-163-106-00	Ceramic Chip 36PF 5% 50V	
C581	FBC+1-163-081-00	Ceramic Chip 0.22MF 25V	
C664	FBC+1-124-233-00	Elect 10MF 20% 16V	
		(IC)	
IC503	FBI+8-759-906-47	IC CX20065	
IC504	FBI+8-759-905-85	IC CX10018	

Ref. No.	Part No.	Description	Remark
		(TRANSISTOR)	
Q508	FBQ+8-729-100-76	Transistor 2SA812	
Q651	FBQ+8-729-100-66	Transistor 2SC1623	
		(RESISTOR)	
R537	FBR+1-216-051-00	Metal Chip 1.2K 5% 1/10W	
R538	FBR+1-216-045-00	Metal Chip 680 5% 1/10W	
R539	FBR+1-216-049-00	Metal Chip 1K 5% 1/10W	
R540	FBR+1-216-065-00	Metal Chip 4.7K 5% 1/10W	
R541	FBR+1-216-093-00	Metal Chip 68K 5% 1/10W	
R542	FBR+1-216-069-00	Metal Chip 6.8K 5% 1/10W	
R544	FBR+1-215-659-00	Metal 5.1K 5% 1/8W	
R545	FBR+1-216-097-00	Metal Chip 100K 5% 1/10W	
R674	FBR+1-216-079-00	Metal Chip 18K 5% 1/10W	
R675	FBR+1-216-059-00	Metal Chip 2.7K 5% 1/10W	
R676	FBR+1-216-049-00	Metal Chip 1K 5% 1/10W	
	♦: FBP+1-610-533-00	FL-1 Board	
		(CAPACITOR)	
C571	FBC+1-163-080-00	Ceramic Chip 0.047MF 10% 25V	
		(CONNECTOR)	
CN507	♦: FBO+1-556-642-00	Connector Assy (2.0MM) 3P	
		(SWITCH)	
S501	FBS+1-554-377-21	Switch, Slide	
	♦: FBP+1-609-864-00	AU-3 Board	
		(CAPACITOR)	
C401	FBC+1-124-225-00	Elect 100MF 20% 6.3V	
C402	FBC+1-163-009-00	Ceramic Chip 0.001MF 10% 50V	
C403	FBC+1-124-238-11	Elect 4.7MF 20% 25V	
C404	FBC+1-124-257-00	Elect 2.2MF 20% 50V	
C405	FBC+1-124-253-00	Elect 0.47MF 20% 50V	
C406	FBC+1-124-238-11	Elect 4.7MF 20% 25V	
C407	FBC+1-163-011-00	Ceramic Chip 0.0015MF 10% 50V	
C408	FBC+1-123-647-00	Elect 47MF 20% 6.3V	
C409	FBC+1-124-253-00	Elect 0.47MF 20% 50V	
C410	FBC+1-124-238-11	Elect 4.7MF 20% 25V	
C411	FBC+1-124-249-00	Elect 0.1MF 20% 50V	
C412	FBC+1-130-489-00	Mylar 0.033MF 5% 50V	
C413	FBC+1-163-011-00	Ceramic Chip 0.0015MF 10% 50V	
C414	FBC+1-124-255-00	Elect 1MF 20% 50V	
C415	FBC+1-163-021-00	Ceramic Chip 0.01MF 10% 50V	
C416	FBC+1-124-140-00	Elect 220MF 20% 10V	
C417	FBC+1-124-169-00	Elect 100MF 20% 10V	
C418	FBC+1-124-238-11	Elect 4.7MF 20% 25V	
C419	FBC+1-124-222-00	Elect 22MF 20% 6.3V	
C420	FBC+1-123-647-00	Elect 47MF 20% 6.3V	
C421	FBC+1-124-253-00	Elect 0.47MF 20% 50V	
C430	FBC+1-163-011-00	Ceramic Chip 0.0015MF 10% 50V	
C432	FBC+1-163-078-00	Ceramic Chip 0.033MF 10% 25V	
C433	FBC+1-163-078-00	Ceramic Chip 0.033MF 10% 25V	
		(CONNECTOR)	
CN401	♦: FBO+1-564-004-00	Pin, Connector 5P	
CN402	♦: FBO+1-564-005-00	Pin, Connector 6P	
CN403	♦: FBO+1-564-004-00	Pin, Connector 5P	
CN407	♦: FBO+1-564-001-11	Pin, Connector 2P	
		(DIODE)	
D401	FBD+8-719-911-19	Diode 1SS119	

AU-3 AU-4 SS-17

Ref. No.	Part No.	Description				Remark
		(IC)				
IC401	FBI+8-759-800-43	IC LA7043M				
		(COIL)				
L401	FBL+1-421-600-00	Coil, Choke (6.8MMH)				
		(TRANSISTOR)				
Q401	FBQ+8-729-100-66	Transistor 2SC1623				
Q406	FBQ+8-729-100-66	Transistor 2SC1623				
Q407	FBQ+8-729-100-66	Transistor 2SC1623				
		(RESISTOR)				
R401	FBR+1-216-067-00	Metal Chip	5.6K	5%	1/10W	
R402	FBR+1-216-071-00	Metal Chip	8.2K	5%	1/10W	
R403	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W	
R404	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W	
R405	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W	
R406	FBR+1-216-069-00	Metal Chip	6.8K	5%	1/10W	
R407	FBR+1-216-069-00	Metal Chip	6.8K	5%	1/10W	
R408	FBR+1-216-022-00	Metal Chip	75	5%	1/10W	
R409	FBR+1-216-025-00	Metal Chip	100	5%	1/10W	
R411	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W	
R412	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W	
R413	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W	
R414	FBR+1-216-111-00	Metal Chip	390K	5%	1/10W	
R415	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W	
R418	FBR+1-216-071-00	Metal Chip	8.2K	5%	1/10W	
R424	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W	
R425	FBR+1-216-094-00	Metal Chip	75K	5%	1/10W	
R426	FBR+1-216-063-00	Metal Chip	3.9K	5%	1/10W	
R427	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W	
R428	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W	
R429	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W	
R437	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W	
		(VARIABLE RESISTOR)				
RV401	FBR+1-226-703-00	Res, Adj, Metal Glaze 10K				
		(SWITCH)				
S401	FBS+1-554-364-00	Switch, Slide				

Ref. No.	Part No.	Description				Remark
	♠: FBP+1-609-865-00	AU-4 Board				
		(CAPACITOR)				
C422	FBC+1-107-177-00	Mica	220PF	5%	500V	
C423	FBC+1-130-486-51	Mylar	0.018MF	5%	50V	
C424	FBC+1-130-485-00	Mylar	0.015MF	5%	50V	
C425	FBC+1-130-485-00	Mylar	0.015MF	5%	50V	
C426	FBC+1-124-233-00	Elect	10MF	20%	16V	
C427	FBC+1-107-177-00	Mica	220PF	5%	500V	
C428	FBC+1-130-303-00	Film	0.018MF	5%	100V	
C429	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V	
C431	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V	
C435	FBC+1-123-647-00	Elect	47MF	20%	6.3V	
		(CONNECTOR)				
CN404	♠: FBO+1-564-001-11	Pin, Connector 2P				
CN405	♠: FBO+1-564-001-11	Pin, Connector 2P				
		(COIL)				
L402	FBL+1-421-601-00	Coil, Choke (27MMH)				
L403	FBL+1-408-429-00	Micro Inductor 470UH				

Ref. No.	Part No.	Description				Remark
		(TRANSISTOR)				
Q402	FBQ+8-729-100-66	Transistor 2SC1623				
Q403	FBQ+8-729-100-66	Transistor 2SC1623				
Q404	FBQ+8-729-100-66	Transistor 2SC1623				
Q405	FBQ+8-729-100-66	Transistor 2SC1623				
Q408	FBQ+8-729-100-66	Transistor 2SC1623				
Q409	FBQ+8-729-100-76	Transistor 2SA812				
Q410	FBQ+8-729-103-52	Transistor 2SC1654				
Q411	FBQ+8-729-103-52	Transistor 2SC1654				
		(RESISTOR)				
R416	FBR+1-216-071-00	Metal Chip	8.2K	5%	1/10W	
R417	FBR+1-216-001-00	Metal Chip	10	5%	1/10W	
R419	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W	
R420	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W	
R421	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W	
R422	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W	
R423	FBR+1-216-001-00	Metal Chip	10	5%	1/10W	
R430	FBR+1-216-088-00	Metal Chip	43K	5%	1/10W	
R431	FBR+1-216-099-00	Metal Chip	120K	5%	1/10W	
R432	FBR+1-216-075-00	Metal Chip	12K	5%	1/10W	
R433	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W	
R434	FBR+1-216-053-00	Metal Chip	1.5K	5%	1/10W	
R435	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W	
R436	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W	
		(VARIABLE RESISTOR)				
RV403	FBR+1-226-776-00	Res, Adj, Metal Glaze 220K				
		(TRANSFORMER)				
T401	FBL+1-433-271-00	Transformer, Bias Oscillator				

Ref. No.	Part No.	Description				Remark
	♠: FBP+A-6717-329-A	SS-17 Board, Complete				
	♠: 3-662-075-00	Cover, Control				
		(CAPACITOR)				
C201	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V	
C202	FBC+1-124-227-11	Elect	10MF	20%	10V	
C203	FBC+1-130-491-00	Mylar	0.047MF	5%	50V	
C204	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V	
C205	FBC+1-131-344-00	Tantalum	0.33MF	20%	35V	
C206	FBC+1-163-078-00	Ceramic Chip	0.033MF	10%	25V	
C207	FBC+1-124-233-00	Elect	10MF	20%	16V	
C208	FBC+1-124-233-00	Elect	10MF	20%	16V	
C209	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V	
C210	FBC+1-130-494-51	Mylar	0.082MF	5%	50V	
C211	FBC+1-163-009-00	Ceramic Chip	0.001MF	10%	50V	
C212	FBC+1-130-489-00	Mylar	0.033MF	5%	50V	
C213	FBC+1-124-253-00	Elect	0.47MF	20%	50V	
C214	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V	
C215	FBC+1-130-479-00	Mylar	0.0047MF	5%	50V	
C216	FBC+1-161-772-11	Ceramic	0.1MF	10%	25V	
C217	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V	
C218	FBC+1-124-169-00	Elect	100MF	20%	10V	
C219	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V	
C220	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V	
C221	FBC+1-124-231-00	Elect	4.7MF		16V	
C222	FBC+1-124-243-11	Elect	2.2MF	20%	35V	
C223	FBC+1-124-227-11	Elect	10MF	20%	10V	
C224	FBC+1-124-243-11	Elect	2.2MF	20%	35V	
C225	FBC+1-163-080-00	Ceramic Chip	0.047MF	10%	25V	
C228	FBC+1-163-021-00	Ceramic Chip	0.01MF	10%	50V	
C229	FBC+1-124-234-00	Elect	22MF	20%	16V	

Ref. No.	Part No.	Description	Remark
C301	FBC+1-163-021-00	Ceramic Chip 0.01MF 10%	50V
C302	FBC+1-130-476-00	Mylar 0.0027MF 5%	50V
C303	FBC+1-163-021-00	Ceramic Chip 0.01MF 10%	50V
C304	FBC+1-124-255-00	Elect 1MF 20%	50V
C305	FBC+1-163-021-00	Ceramic Chip 0.01MF 10%	50V
C306	FBC+1-124-255-00	Elect 1MF 20%	50V
C307	FBC+1-163-021-00	Ceramic Chip 0.01MF 10%	50V
C308	FBC+1-130-476-00	Mylar 0.0027MF 5%	50V
C309	FBC+1-163-038-00	Ceramic Chip 0.1MF	25V
C311	FBC+1-163-021-00	Ceramic Chip 0.01MF 10%	50V
C312	FBC+1-163-038-00	Ceramic Chip 0.1MF	25V
C313	FBC+1-124-255-00	Elect 1MF 20%	50V
C314	FBC+1-124-255-00	Elect 1MF 20%	50V
C315	FBC+1-124-168-00	Elect 100MF 20%	16V
C317	FBC+1-163-081-00	Ceramic Chip 0.22MF	25V
C318	FBC+1-163-104-00	Ceramic Chip 30PF 5%	50V
C319	FBC+1-163-104-00	Ceramic Chip 30PF 5%	50V
C320	FBC+1-163-037-00	Ceramic Chip 0.022MF 10%	25V
C321	FBC+1-163-037-00	Ceramic Chip 0.022MF 10%	25V
C326	FBC+1-131-408-00	Tantalum 1MF 20%	25V
C327	FBC+1-131-408-00	Tantalum 1MF 20%	25V
C328	FBC+1-131-408-00	Tantalum 1MF 20%	25V
C329	FBC+1-131-408-00	Tantalum 1MF 20%	25V
C330	FBC+1-163-021-00	Ceramic Chip 0.01MF 10%	50V
C331	FBC+1-163-037-00	Ceramic Chip 0.022MF 10%	25V
C332	FBC+1-163-017-00	Ceramic Chip 0.0047MF 10%	50V
C333	FBC+1-163-021-00	Ceramic Chip 0.01MF 10%	50V
C335	FBC+1-163-075-00	Ceramic Chip 0.047MF	50V
C336	FBC+1-163-077-00	Ceramic Chip 0.1MF	50V
C337	FBC+1-124-233-00	Elect 10MF 20%	16V
C338	FBC+1-131-380-00	Tantalum 33MF 10%	10V
C340	FBC+1-131-368-00	Tantalum 3.3MF 10%	16V
		(CONNECTOR)	
CN201	♠: FBO+1-564-012-00	Pin, Connector 2P	
CN202	♠: FBO+1-564-001-11	Pin, Connector 2P	
CN203	♠: FBO+1-564-012-00	Pin, Connector 2P	
CN204	♠: FBO+1-564-001-11	Pin, Connector 2P	
CN205	♠: FBO+1-564-001-11	Pin, Connector 2P	
CN206	♠: FBO+1-564-002-00	Pin, Connector 3P	
CN207	♠: FBO+1-564-013-00	Pin, Connector 3P	
CN301	♠: FBO+1-564-016-00	Pin, Connector 6P	
CN302	♠: FBO+1-564-002-00	Pin, Connector 3P	
CN303	♠: FBO+1-564-001-11	Pin, Connector 2P	
CN305	♠: FBO+1-564-001-11	Pin, Connector 2P	
CN306	♠: FBO+1-564-003-00	Pin, Connector 4P	
CN307	♠: FBO+1-564-003-00	Pin, Connector 4P	
CN308	♠: FBO+1-564-005-00	Pin, Connector 6P	
CN309	♠: FBO+1-564-001-11	Pin, Connector 2P	
CN310	♠: FBO+1-564-002-00	Pin, Connector 3P	
CN311	♠: FBO+1-564-002-00	Pin, Connector 3P	
CN312	♠: FBO+1-564-002-00	Pin, Connector 3P	
CN313	♠: FBO+1-564-020-00	Pin, Connector 10P	
CN314	♠: FBO+1-564-001-11	Pin, Connector 2P	
CN316	♠: FBO+1-564-002-00	Pin, Connector 3P	
		(DIODE)	
D202	FBD+8-719-200-27	Diode E10DS2	
D301	FBD+8-719-911-19	Diode 1SS119	
D302	=> FBD+8-719-910-69	Diode HZ602L	
D303	FBD+8-719-200-27	Diode E10DS2	
D304	FBD+8-719-200-27	Diode E10DS2	
D305	FBD+8-719-200-27	Diode E10DS2	
D306	FBD+8-719-200-27	Diode E10DS2	
D307	FBD+8-719-100-03	Diode 1S2835	
D308	FBD+8-719-200-27	Diode E10DS2	
D309	FBD+8-719-200-27	Diode E10DS2	
D310	FBD+8-719-200-27	Diode E10DS2	
D311	FBD+8-719-200-27	Diode E10DS2	
D312	FBD+8-719-200-27	Diode E10DS2	
D313	FBD+8-719-100-03	Diode 1S2835	
D314	FBD+8-719-100-03	Diode 1S2835	
D315	FBD+8-719-100-66	Diode RD12E-B3	
D316	FBD+8-719-100-05	Diode 1S2837	
		(CONVERTER)	
DR301	FBO+1-464-269-00	Converter, DC-DC	
		(IC)	
IC201	FBI+8-759-601-86	IC CX186	
IC202	FBI+8-759-100-94	IC UPC358G2	
IC301	FBI+8-759-909-65	IC MB88501-167N	
IC302	FBI+8-759-100-93	IC UPC393G2	
		(COIL)	
L201	FBL+1-408-450-11	Micro Inductor 47UH	
L203	FBL+1-408-847-00	Micro Inductor 35UH	
L301	FBL+1-408-462-11	Micro Inductor 470UH	
L302	FBL+1-408-450-11	Micro Inductor 47UH	
		(TRANSISTOR)	
Q201	FBQ+8-729-100-66	Transistor 2SC1623	
Q202	FBQ+8-729-100-76	Transistor 2SA812	
Q203	FBQ+8-729-100-66	Transistor 2SC1623	
Q204	FBQ+8-729-100-66	Transistor 2SC1623	
Q205	FBQ+8-729-100-76	Transistor 2SA812	
Q210	FBQ+8-729-100-76	Transistor 2SA812	
Q211	FBQ+8-729-100-66	Transistor 2SC1623	
Q212	FBQ+8-729-100-66	Transistor 2SC1623	
Q213	FBQ+8-729-100-66	Transistor 2SC1623	
Q214	FBQ+8-729-100-66	Transistor 2SC1623	
Q215	FBQ+8-729-100-66	Transistor 2SC1623	
Q217	FBQ+8-729-199-92	Transistor 2SD999	
Q218	FBQ+8-729-199-92	Transistor 2SD999	
Q219	FBQ+8-729-100-76	Transistor 2SA812	
Q220	FBQ+8-729-100-76	Transistor 2SA812	
Q301	FBQ+8-729-100-66	Transistor 2SC1623	
Q302	FBQ+8-729-100-66	Transistor 2SC1623	
Q303	FBQ+8-729-100-76	Transistor 2SA812	
Q304	FBQ+8-729-100-76	Transistor 2SA812	
Q306	FBQ+8-729-100-76	Transistor 2SA812	
Q307	=> FBQ+8-729-245-83	Transistor 2SC2458	
Q308	FBQ+8-729-100-66	Transistor 2SC1623	
Q309	FBQ+8-729-100-66	Transistor 2SC1623	
Q310	FBQ+8-729-104-36	Transistor 2SB1040	
Q311	FBQ+8-729-100-76	Transistor 2SA812	
Q312	FBQ+8-729-100-66	Transistor 2SC1623	
Q313	FBQ+8-729-102-78	Transistor 2SB962	
Q314	FBQ+8-729-100-76	Transistor 2SA812	
Q315	FBQ+8-729-100-66	Transistor 2SC1623	
Q316	FBQ+8-729-101-07	Transistor 2SB798	
Q317	FBQ+8-729-100-76	Transistor 2SA812	
Q318	FBQ+8-729-100-66	Transistor 2SC1623	
Q319	FBQ+8-729-101-07	Transistor 2SB798	
Q320	FBQ+8-729-100-76	Transistor 2SA812	
Q321	FBQ+8-729-100-66	Transistor 2SC1623	
Q322	FBQ+8-729-102-78	Transistor 2SB962	
Q323	FBQ+8-729-100-76	Transistor 2SA812	
Q324	FBQ+8-729-100-76	Transistor 2SA812	
Q325	FBQ+8-729-100-76	Transistor 2SA812	
Q326	FBQ+8-729-100-76	Transistor 2SA812	
Q328	FBQ+8-729-199-92	Transistor 2SD999	

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Ref. No.	Part No.	Description			Remark
Q329	FBQ+8-729-101-07	Transistor 2SB798			
Q331	FBQ+8-729-199-92	Transistor 2SD999			
Q332	FBQ+8-729-101-07	Transistor 2SD798			
Q333	FBQ+8-729-100-66	Transistor 2SC1623			
Q334	FBQ+8-729-100-76	Transistor 2SA812			
Q335	FBQ+8-729-100-76	Transistor 2SA812			
Q336	FBQ+8-729-100-66	Transistor 2SC1623			
Q338	FBQ+8-729-100-66	Transistor 2SC1623			
Q339	FBQ+8-729-100-76	Transistor 2SA812			
Q340	FBQ+8-729-100-76	Transistor 2SA812			
Q341	FBQ+8-729-100-76	Transistor 2SA812			
Q342	FBQ+8-729-100-66	Transistor 2SC1623			
Q343	FBQ+8-729-100-66	Transistor 2SC1623			
Q344	FBQ+8-729-100-66	Transistor 2SC1623			
		(RESISTOR)			
R201	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R202	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R203	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R204	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R205	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R206	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R207	FBR+1-216-075-00	Metal Chip	12K	5%	1/10W
R208	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R209	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R210	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R211	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R212	FBR+1-216-129-00	Metal Chip	2.2M	5%	1/10W
R213	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R214	FBR+1-216-069-00	Metal Chip	6.8K	5%	1/10W
R215	FBR+1-216-057-00	Metal Chip	2.2K	5%	1/10W
R216	FBR+1-215-465-00	Metal	68K	1%	1/6W
R217	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R218	FBR+1-215-469-00	Metal	100K	1%	1/6W
R219	FBR+1-216-093-00	Metal Chip	68K	5%	1/10W
R220	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R221	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R222	FBR+1-216-111-00	Metal Chip	390K	5%	1/10W
R223	FBR+1-216-095-00	Metal Chip	82K	5%	1/10W
R224	FBR+1-216-095-00	Metal Chip	82K	5%	1/10W
R225	FBR+1-216-053-00	Metal Chip	1.5K	5%	1/10W
R227	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R228	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R229	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R230	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R231	FBR+1-216-077-00	Metal Chip	15K	5%	1/10W
R232	FBR+1-216-060-00	Metal Chip	3K	5%	1/10W
R233	FBR+1-216-056-00	Metal Chip	2K	5%	1/10W
R234	FBR+1-216-056-00	Metal Chip	2K	5%	1/10W
R235	FBR+1-216-121-00	Metal Chip	1M	5%	1/10W
R236	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R237	FBR+1-216-077-00	Metal Chip	15K	5%	1/10W
R238	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R239	FBR+1-216-099-00	Metal Chip	120K	5%	1/10W
R240	FBR+1-216-069-00	Metal Chip	6.8K	5%	1/10W
R241	FBR+1-216-076-00	Metal Chip	13K	5%	1/10W
R242	FBR+1-216-036-00	Metal Chip	300	5%	1/10W
R243	FBR+1-216-079-00	Metal Chip	18K	5%	1/10W
R244	FBR+1-216-082-00	Metal Chip	24K	5%	1/10W
R245	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R246	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R247	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R248	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R249	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R250	FBR+1-216-031-00	Metal Chip	180	5%	1/10W
R253	FBR+1-216-066-00	Metal Chip	5.1K	5%	1/10W
R254	FBR+1-216-066-00	Metal Chip	5.1K	5%	1/10W
R255	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R256	FBR+1-246-446-00	Cabon	75	5%	1/4W
R301	FBR+1-216-106-00	Metal Chip	240K	5%	1/10W
R302	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R303	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R304	FBR+1-216-033-00	Metal Chip	220	5%	1/10W
R305	FBR+1-216-059-00	Metal Chip	2.7K	5%	1/10W
R306	FBR+1-216-071-00	Metal Chip	8.2K	5%	1/10W
R307	FBR+1-216-087-00	Metal Chip	39K	5%	1/10W
R308	FBR+1-216-093-00	Metal Chip	68K	5%	1/10W
R309	FBR+1-216-059-00	Metal Chip	2.7K	5%	1/10W
R310	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R311	FBR+1-216-091-00	Metal Chip	56K	5%	1/10W
R312	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R313	FBR+1-216-087-00	Metal Chip	39K	5%	1/10W
R314	FBR+1-216-099-00	Metal Chip	120K	5%	1/10W
R315	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R316	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R317	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R318	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R319	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R320	FBR+1-216-298-00	Metal Chip	2.2	5%	1/10W
R321	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R322	FBR+1-216-113-00	Metal Chip	470K	5%	1/10W
R323	FBR+1-216-113-00	Metal Chip	470K	5%	1/10W
R324	FBR+1-216-051-00	Metal Chip	1.2K	5%	1/10W
R325	FBR+1-216-051-00	Metal Chip	1.2K	5%	1/10W
R326	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R327	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R328	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R329	FBR+1-216-105-00	Metal Chip	220K	5%	1/10W
R330	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R331	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R332	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R333	FBR+1-216-047-00	Metal Chip	820	5%	1/10W
R334	FBR+1-216-084-00	Metal Chip	30K	5%	1/10W
R335	FBR+1-216-099-00	Metal Chip	120K	5%	1/10W
R336	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R337	FBR+1-216-115-00	Metal Chip	560K	5%	1/10W
R338	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R339	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R340	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R341	FBR+1-216-117-00	Metal Chip	680K	5%	1/10W
R342	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R343	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W
R344	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R345	FBR+1-216-083-00	Metal Chip	27K	5%	1/10W
R346	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R347	FBR+1-216-093-00	Metal Chip	68K	5%	1/10W
R348	FBR+1-216-093-00	Metal Chip	68K	5%	1/10W
R349	FBR+1-216-093-00	Metal Chip	68K	5%	1/10W
R350	FBR+1-216-045-00	Metal Chip	680	5%	1/10W
R351	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R352	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R353	FBR+1-216-041-00	Metal Chip	470	5%	1/10W
R354	FBR+1-247-821-00	Carbon	390	5%	1/6W
R355	FBR+1-247-821-00	Carbon	390	5%	1/6W
R356	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R357	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R358	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R359	FBR+1-246-455-00	Carbon	180	5%	1/4W
R360	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R361	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R362	FBR+1-246-455-00	Carbon	180	5%	1/4W
R363	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R364	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R365	FBR+1-246-455-00	Carbon	180	5%	1/4W
R366	FBR+1-216-049-00	Metal Chip	1K	5%	1/10W
R367	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R368	FBR+1-246-455-00	Carbon	180	5%	1/4W
R369	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R370	FBR+1-216-037-00	Metal Chip	330	5%	1/10W
R371	FBR+1-216-045-00	Metal Chip	680	5%	1/10W
R372	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R373	FBR+1-216-045-00	Metal Chip	680	5%	1/10W
R374	FBR+1-216-045-00	Metal Chip	680	5%	1/10W
R375	FBR+1-216-077-00	Metal Chip	15K	5%	1/10W
R376	FBR+1-216-077-00	Metal Chip	15K	5%	1/10W
R377	FBR+1-216-035-00	Metal Chip	270	5%	1/10W
R378	FBR+1-216-035-00	Metal Chip	270	5%	1/10W
R379	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R380	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R381	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R382	FBR+1-216-046-00	Metal Chip	750	5%	1/10W
R383	⚠ FBR+1-532-637-00	Link, IC (ICP-N25)			
R384	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R385	FBR+1-216-046-00	Metal Chip	750	5%	1/10W
R386	FBR+1-216-046-00	Metal Chip	750	5%	1/10W
R387	FBR+1-216-111-00	Metal Chip	390K	5%	1/10W
R388	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R389	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R390	FBR+1-216-085-00	Metal Chip	33K	5%	1/10W
R391	FBR+1-216-093-00	Metal Chip	68K	5%	1/10W
R392	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R394	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R395	FBR+1-216-055-00	Metal Chip	1.8K	5%	1/10W
R396	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R397	FBR+1-216-045-00	Metal Chip	680	5%	1/10W
R398	FBR+1-216-113-00	Metal Chip	470K	5%	1/10W
R399	FBR+1-216-099-00	Metal Chip	120K	5%	1/10W
R450	FBR+1-216-107-00	Metal Chip	270K	5%	1/10W
R451	FBR+1-216-105-00	Metal Chip	220K	5%	1/10W
R452	FBR+1-216-107-00	Metal Chip	270K	5%	1/10W
R453	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R454	FBR+1-216-061-00	Metal Chip	3.3K	5%	1/10W
R455	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R456	FBR+1-216-073-00	Metal Chip	10K	5%	1/10W
R457	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R458	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R461	FBR+1-216-092-00	Metal Chip	62K	5%	1/10W
R462	FBR+1-216-115-00	Metal Chip	560K	5%	1/10W
R463	FBR+1-216-113-00	Metal Chip	470K	5%	1/10W
R464	FBR+1-216-097-00	Metal Chip	100K	5%	1/10W
R465	FBR+1-216-089-00	Metal Chip	47K	5%	1/10W
R466	FBR+1-216-065-00	Metal Chip	4.7K	5%	1/10W
R467	FBR+1-216-081-00	Metal Chip	22K	5%	1/10W
R468	FBR+1-216-025-00	Metal Chip	100	5%	1/10W
R469	FBR+1-216-046-00	Metal Chip	750	5%	1/10W
R470	FBR+1-216-046-00	Metal Chip	750	5%	1/10W
		(VARIABLE RESISTOR)			
RV201	FBR+1-228-760-00	Res, Adj, Metal Glaze 47K			
RV202	FBR+1-226-772-00	Res, Adj, Metal Glaze 4.7K			
RV301	FBR+1-226-703-00	Res, Adj, Metal Glaze 10K			
RV302	FBR+1-226-774-00	Res, Adj, Metal Glaze 47K			
RV303	FBR+1-226-774-00	Res, Adj, Metal Glaze 47K			
RV304	FBR+1-226-774-00	Res, Adj, Metal Glaze 47K			
RV305	FBR+1-226-774-00	Res, Adj, Metal Glaze 47K			

Ref. No.	Part No.	Description	Remark
		(CRYSTAL)	
X301	FBX+1-567-192-00	Oscillator, Ceramic	
	♠: FBP+1-609-855-00	LM-12 Board	
		(CAPACITOR)	
C940	FBC+1-101-005-00	Ceramic 0.022MF 50V	
C941	FBC+1-101-005-00	Ceramic 0.022MF 50V	
		(COIL)	
L940	FBL+1-407-847-00	Micro Inductor 35UH	
	♠: FBP+1-609-866-00	DM-4 Board	
		(CAPACITOR)	
C920	FBC+1-101-005-00	Ceramic 0.022MF 50V	
C921	FBC+1-101-005-00	Ceramic 0.022MF 50V	
		(COIL)	
L920	FBC+1-407-847-00	Micro Inductor 35UH	
	♠: FBP+1-609-860-00	RD-8 Board	
		(DIODE)	
D901	FBD+8-719-921-03	Diode GP-2S02B	
		(TRANSISTOR)	
Q901	FBQ+8-729-102-78	Transistor 2SB962	
	♠: FBP+1-610-180-00	SW-28 Board	
	♠: FBA+3-670-095-00	Holder, Led	
	♠: FBA+3-681-570-00	Holder, Led	
	♠: FBA+3-682-518-00	Cushion	
		(DIODE)	
D980	FBD+8-719-812-30	Diode TLO123	
D981	FBD+8-719-812-31	Diode TLR123	
D982	FBD+8-719-821-32	Diode TLY123	
D983	FBD+8-719-812-31	Diode TLR123	
		(SWITCH)	
S980	FBS+1-554-174-00	Switch, Key Board	
S981	FBS+1-554-174-00	Switch, Key Board	
	♠: FBP+1-609-857-00	JK-2 Board	
	♠: FBO+1-533-146-00	Holder, Fuse	
		(CAPACITOR)	
C901	FBC+1-124-233-00	Elect 10MF 20% 16V	
		(CONNECTOR)	
CN901	♠: FBO+1-564-002-00	Pin, Connector 3P	
CN902	♠: FBO+1-564-005-00	Pin, Connector 6P	
CN903	♠: FBO+1-564-004-00	Pin, Connector 5P	
		(FUSE)	
F901	⚠ FBO+1-532-350-00	Fuse, Time-LAG T4A 250V	
		(JACK)	
J901	FBO+1-507-886-00	Jack, Power	
J902	FBO+1-507-885-11	Jack, Miniature	
J903	FBO+1-507-884-00	Jack, Stereo Miniature	
J904	FBO+1-507-885-21	Jack, Miniature	

JK-2 TRANSLATION

Ref. No.	Part No.	Description	Remark
		(RESISTOR)	
R901	FBR+1-247-799-00	Carbon 47 5%	1/6W
	●: FBP+1-610-605-00	Translation Board	
	FBO+2-523-713-00	Terminal	
		(CAPACITOR)	
C101	FBC+1-163-205-21	Ceramic Chip 0.001MF	10% 50V
		(CONNECTOR)	
CNP101	FBO+1-564-001-11	Pin, Connector 2P	
		(TRANSISTOR)	
Q101	FBQ+8-729-700-06	Transistor NJM2056-4	
		(MISCELLANEOUS)	
	●: FBO+1-556-970-00	Connector Assy (2.0MM) 3P	
	FBO+1-562-325-00	Socket Assy, Image Pickup Tube	
	FBO+1-806-682-00	Sensor, Dew Condensation	
	FB4+8-814-165-01	Microphone, Built-in (C-2003)	
	FB4+8-814-173-01	Microphone, Built-in (CU11-01)	
	FB6+8-825-561-10	Head, Eraze (EF254-21)	
	FB6+8-701-032-29	CT-3222	
M901	FBM+8-835-098-01	Motor, DC (DNR-6600A) (Loading)	
M902	FBM+8-835-099-01	Motor, DC (MNR-5003A) (Drum)	
PM901	⚠ FBO+1-454-357-11	Solenoid, Pluger (Brake)	
PM902	⚠ FBO+1-454-357-21	Solenoid, Plunger (Pinch)	
Q851	FBQ+8-729-177-22	Transistor 2SB772	
S301	FBS+1-554-582-00	Switch, Micro (Cassette IN)	
S302	FBS+1-554-582-00	Switch, Micro (DWN)	
S303	FBS+1-554-581-00	Switch, Micro (Loading End)	
S930	FBS+1-554-561-00	Switch, Tact (Rec)	
S931	FBS+1-554-560-00	Switch, Seesaw (Zoom)	
	(ACCESSORIES AND PACKING MATERIALS)		
	FBD+A-670-139-6A	Belt Assy, Shoulder	
	FBD+1-504-044-00	Earphone, Magnetic (ME-21)	
	FBO+3-681-680-00	Cover, Microphone	
	FBO+3-681-823-00	Cover, Eyecup	
	FBO+3-682-534-00	Cushion (Upper)	
	FBO+3-682-535-00	Cushion (Lower)	
	FBO+3-682-561-00	Pad AEP	
	143-6-411T-46900	Manual, Focusing (English)	
	143-6-411T-48000	Manual, Focusing	
	143-6-411T-46500	Manual, Instruction (English)	
	143-6-411T-46600	Manual, Instruction (French)	
	143-6-411T-46700	Manual, Instruction (German)	
	143-6-411T-46800	Manual, Instruction (Spain)	

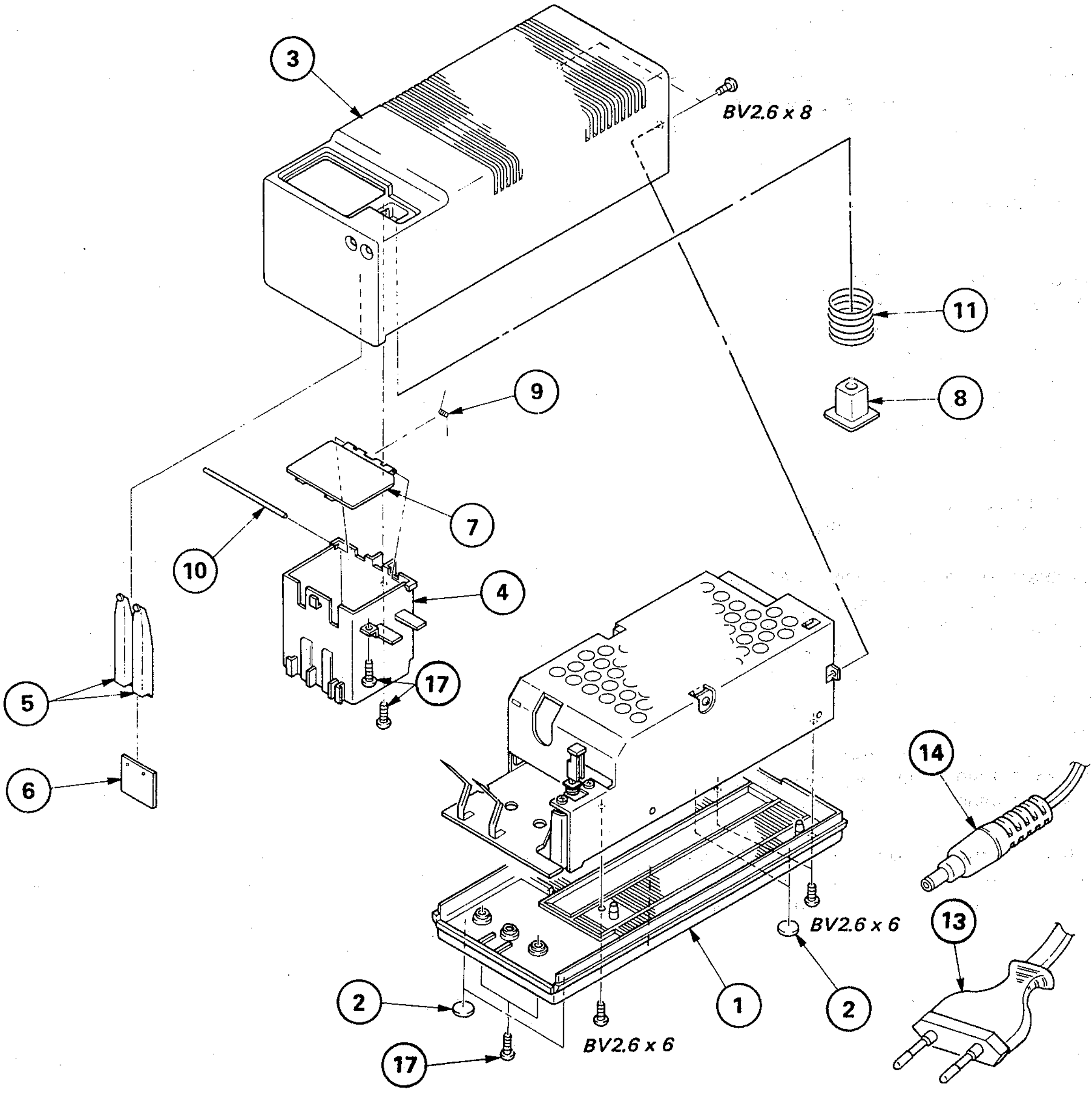
PARTS LIST

SANYO

AC Power Adaptor

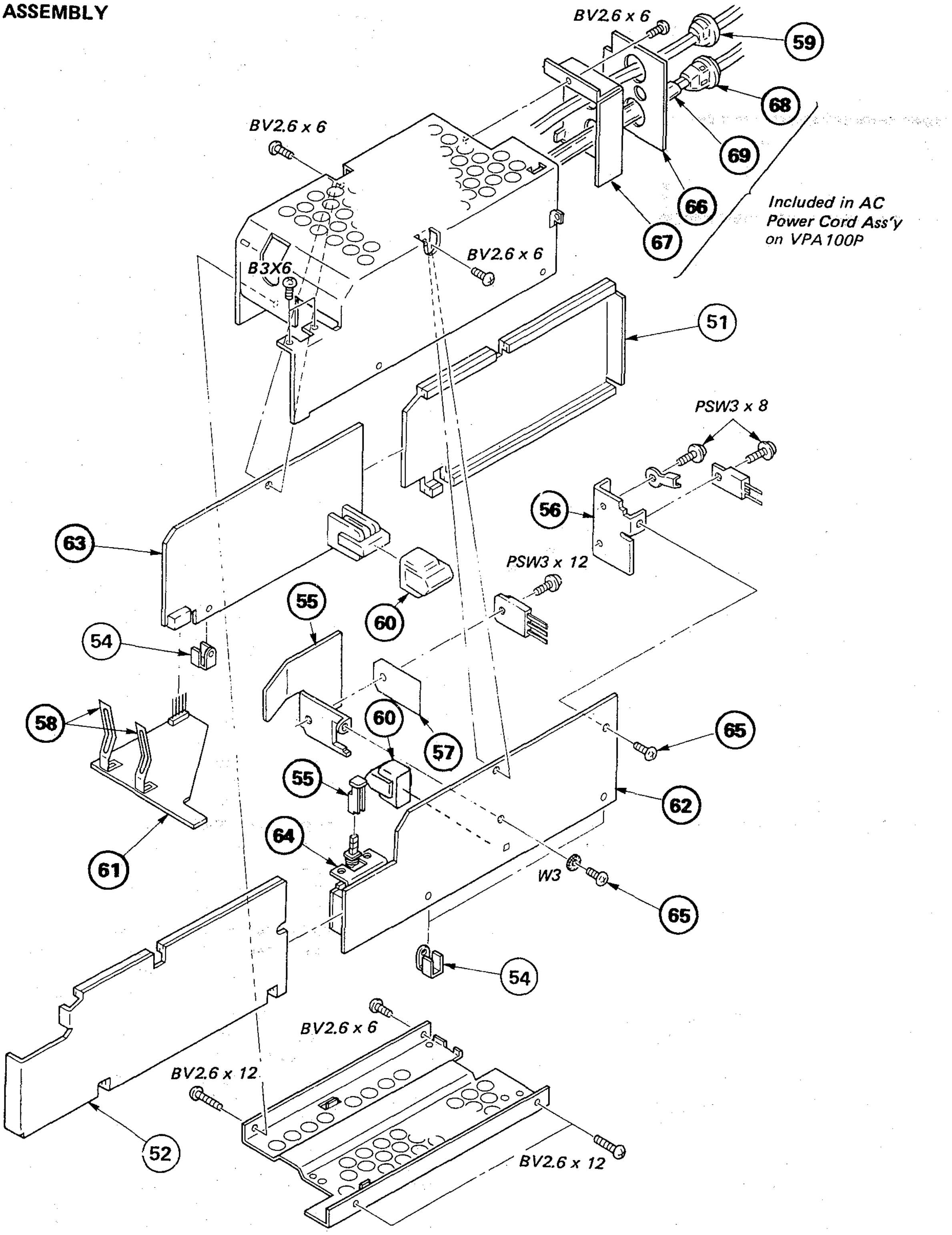
VPA 100P

CASE ASSEMBLY



No.	Part No.	Description
1	FB1+2-392-299-00	Case, Lower
2	FB1+2-392-285-00	Foot
3	FB1+2-392-703-15	Case, Upper (SANYO)
4	FB9+2-392-704-00	Case, Battery
5	FB9+2-392-286-00	Indicator, UZ
6	FB9+2-392-287-00	Retainer, Indicator
7	FB9+2-392-288-00	Lid, Battery Case, UZ
8	FB9+2-392-289-00	Button, UZ
9	FB3+2-392-290-00	Spring, Torsion
10	FB9+2-392-291-00	Shaft
11	FB3+2-392-292-00	Spring, Compression
13	⚠FBO+9-983-645-01	Cord Assy, Power
14	FBO+1-557-111-00	Cord, DC Output
17	FB2+9-983-575-01	Screw +BV2.6x10

CHASSIS ASSEMBLY


BV2.6 x 6
59
68
69
66
67
Included in AC Power Cord Ass'y on VPA100P
BV2.6 x 6
B3X6
BV2.6 x 6
51
PSW3 x 8
56
63
PSW3 x 12
55
60
54
58
60
57
65
55
62
64
61
W3
65
54
BV2.6 x 6
BV2.6 x 12
52
BV2.6 x 12

Ref. No.	Part No.	Description
51	♠: FB9+2-392-295-00	Insulator (Left)
52	♠: FB9+2-392-296-00	Insualtor (Right)
53	FB9+2-392-281-00	Shaft
54	FB9+2-392-702-00	Bracket, Ground
55	♠: FB9+2-392-282-00	Heat Sink (T)
56	♠: FB9+2-392-283-00	Heat Sink (D)
57	FB9+2-392-701-00	Sheet, Insulating
58	FB9+2-392-284-00	Terminal, Battery
59	FB9+2-231-019-00	Bushing, DC Cord
60	FB9+4-886-828-00	Cover, LFT
61	♠: FBP+1-610-645-00	UZ-F Board
62	♠: FBP+1-611-263-00	UZ-R Board
63	FBP+1-611-264-00	UZ-L Board
64	⚠ FBS+1-553-834-21	Switch, Power (SW1)
65	FB2+2-291-546-00	Screw (3 x 6), Small
66	FB9+2-392-717-00	Plate (E), Ornamental, Rear Panel
67	♠: FB9+2-392-718-00	Panel (E), Rear
68	FB9+2-234-904-00	Bushing, AC Cord
69	♠: FB9+9-983-573-01	Tube, Vinyl

ELECTRICAL PARTS LIST

When indicating parts by reference number, please include the board name.

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

Ref. No.	Part No.	Description		
	♦: FBP+1-611-264-00	UZ-L Board		
		(CAPACITORS)		
C8	FBC+9-982-786-01	Elect	1MF	160V
C9	FBC+1-102-114-00	Ceramic	470PF	50V
C10	FBC+1-123-307-00	Elect	100MF	10V
C11	FBC+1-123-320-00	Elect	100MF	16V
C13	FBC+9-983-553-01	Elect	2200MF	16V
C14	FBC+1-108-234-00	PE Terephthalate	0.0047MF	50V
C15	FBC+1-108-251-00	PE Terephthalate	0.1MF	50V
C16	FBC+1-108-239-00	PE Terephthalate	0.01MF	50V
C17	FBC+1-108-251-00	PE Terephthalate	0.1MF	50V
C18	FBC+1-123-356-00	Elect	10MF	50V
C20	FBC+1-123-320-00	Elect	100MF	16V
C21	FBC+1-123-320-00	Elect	100MF	16V
C22	FBC+9-982-783-01	Ceramic	470PF	500V
C23	FBC+9-983-554-01	Film	1MF	63V
C24	FBC+1-123-356-00	Elect	10MF	50V
C25	FBC+1-123-318-00	Elect	33MF	16V
C27	FBC+1-123-318-00	Elect	33MF	16V
C28	FBC+1-123-354-00	Elect	3.3MF	50V
C29	FBC+1-102-129-00	Ceramic	0.01MF	50V
C30	FBC+1-123-318-00	Elect	33MF	16V
		(CONNECTOR)		
CN2	♦: FBO+9-983-570-01	Housing, Connector (5P)		
		(PLUG)		
CNP3	♦: FBO+9-983-571-01	Pin, Connector (2P)		
		(DIODE)		
D2	FBD+8-719-110-00	Diode RD100E-B		
D3	FBD+8-719-156-25	Diode RD6.2E-B2Z		
D4	=> FBD+8-719-815-55	Diode 1S1585		
D7	=> FBD+8-719-815-55	Diode 1S1585		
D8	FBD+8-719-100-56	Diode RD10E-B1		
D9	FBD+8-719-100-72	Diode RD15E-B3		
D10	=> FBD+8-719-815-55	Diode 1S1585		
D11	FBD+8-719-100-38	Diode RD6.2E-B2		
D15	FBD+8-719-100-38	Diode RD6.2E-B2		
D16	FBD+8-719-100-38	Diode RD6.2E-B2		
D17	=> FBD+8-719-815-55	Diode 1S1585		
D18	=> FBD+8-719-815-55	Diode 1S1585		
D19	FBD+8-719-100-60	Diode RD11E-B1		
D20	=> FBD+8-719-815-55	Diode 1S1585		
D21	=> FBD+8-719-815-55	Diode 1S1585		
D22	=> FBD+8-719-815-55	Diode 1S1585		
D23	FBD+8-719-100-14	Diode RD3.0E-B1		
D24	=> FBD+8-719-815-55	Diode 1S1585		
		(IC)		
IC1	FBI+8-759-937-59	IC MB3759		
IC2	FBI+9-983-564-01	IC AN6780		
IC3	FBI+8-759-101-30	IC UPC408IC		

Ref. No.	Part No.	Description		
		(TRANSISTORS)		
Q1	FBQ+8-729-175-22	Transistor 2SC2752		
Q2	FBQ+9-983-561-01	Transistor 2SC2870L		
Q4	FBQ+8-729-194-57	Transistor 2SC945-P		
Q5	FBQ+8-729-201-16	Transistor 2SK117Y		
Q6	FBQ+8-729-194-57	Transistor 2SC945-P		
Q7	=> FBQ+8-729-177-43	Transistor 2SD774		
Q8	=> FBQ+8-729-612-77	Transistor 2SA1027R		
Q9	FBQ+9-983-563-01	Thyristor 03P2M		
		(RESISTORS)		
R5	FBR+1-244-931-00	Carbon	270K	1/2W
R6	FBR+1-246-545-00	Carbon	1M	1/4W
R7	FBR+1-246-469-00	Carbon	680	1/4W
R8	FBR+1-247-857-00	Carbon	12K	1/6W
R9	FBR+1-247-857-00	Carbon	12K	1/6W
R10	FBR+1-217-596-00	Metal Plate	0.05	2W
R11	FBR+1-246-484-00	Carbon	3K	1/4W
R12	FBR+1-246-469-00	Carbon	680	1/4W
R13	FBR+1-247-887-00	Carbon	220K	1/6W
R14	FBR+1-246-440-00	Carbon	43	1/4W
R15	FBR+1-246-479-00	Carbon	1.8K	1/4W
R16	FBR+1-246-513-00	Carbon	47K	1/4W
R17	FBR+1-246-449-00	Carbon	100	1/4W
R18	FBR+1-246-495-00	Carbon	8.2K	1/4W
R19	FBR+1-246-491-00	Carbon	5.6K	1/4W
R20	FBR+1-247-839-00	Carbon	2.2K	1/6W
R21	FBR+1-246-479-00	Carbon	1.8K	1/4W
R22	FBR+1-246-523-00	Carbon	120K	1/4W
R23	FBR+1-247-849-00	Carbon	5.6K	1/6W
R24	FBR+1-246-489-00	Carbon	4.7K	1/4W
R25	FBR+1-246-488-00	Carbon	4.3K	1/4W
R26	FBR+1-246-491-00	Carbon	5.6K	1/4W
R27	FBR+1-246-497-00	Carbon	10K	1/4W
R28A	FBR+1-246-483-00	Carbon	2.7K	1/4W
R28B	FBR+1-246-499-00	Carbon	12K	1/4W
R29	FBR+1-246-473-00	Carbon	1K	1/4W
R30	FBR+1-246-521-00	Carbon	100K	1/4W
R31	FBR+1-246-473-00	Carbon	1K	1/4W
R32	FBR+1-212-865-00	Fuse	22	1/2W
R34	FBR+1-246-497-00	Carbon	10K	1/4W
R35	FBR+1-246-497-00	Carbon	10K	1/4W
R36	FBR+1-246-481-00	Carbon	2.2K	1/4W
R37	FBR+1-246-536-00	Carbon	430K	1/4W
R38	FBR+1-246-497-00	Carbon	10K	1/4W
R39	FBR+1-246-497-00	Carbon	10K	1/4W
R40	FBR+1-246-497-00	Carbon	10K	1/4W
R41	FBR+1-246-473-00	Carbon	1K	1/4W
R42	FBR+1-246-521-00	Carbon	100K	1/4W
R43	FBR+1-246-521-00	Carbon	100K	1/4W
R44	FBR+9-983-557-01	Carbon	4.7M	1/4W
R45	FBR+1-246-473-00	Carbon	1K	1/4W
R46	FBR+1-246-489-00	Carbon	4.7K	1/4W

UZ-L UZ-R UZ-F

Ref. No.	Part No.	Description		
R47	FBR+1-246-489-00	Carbon	4.7K	1/4W
R48	FBR+1-246-469-00	Carbon	680	1/4W
R51	FBR+1-246-443-00	Carbon	56	1/4W
R52	FBR+1-246-481-00	Carbon	2.2K	1/4W
R53	FBR+9-983-558-01	Thermistor (Positive)		
R54	FBR+1-246-461-00	Carbon	330	1/4W
		(VARIABLE RESISTOR)		
RV1	FBR+1-224-660-21	Adj, Metal Film 1K-B		
		(TRANSFORMERS)		
T2	⚠FBL+1-437-140-00	Transformer, Starting		
T5	FBL+9-983-567-01	Coil, Choke		

Ref. No.	Part No.	Description		
	♦: FBP+1-611-263-00	UZ-R Board		
	FBO+1-533-087-00	Holder, Fuse		
		(RING)		
B1	FBO+9-983-568-01	Ring, Ferrite Bead		
		(CAPACITORS)		
C1	⚠FBC+1-130-712-00	Film	0.47MF	250V
C2	⚠FBC+1-161-742-00	Ceramic	2200PF	400V
C3	⚠FBC+1-161-742-00	Ceramic	2200PF	400V
C4	⚠FBC+1-161-742-00	Ceramic	2200PF	400V
C5	⚠FBC+9-983-550-01	Elect	82MF	400V
C6	FBC+9-983-551-01	Film	0.033MF	630V
C7	FBC+9-983-552-01	Ceramic	150PF	2KV
C12	FBC+9-983-553-01	Elect	2200MF	16V
C19	FBC+9-982-783-01	Ceramic	470PF	500V
C26	FBC+1-108-230-00	PE Terephthalate	0.0022MF	50V
C31	⚠FBC+1-161-742-00	Ceramic	2200PF	400V
C32	⚠FBC+1-161-742-00	Ceramic	2200PF	400V
C33	⚠FBC+1-161-742-00	Ceramic	2200PF	400V
C34	⚠FBC+1-130-712-00	Film	0.47MF	250V
C35	⚠FBC+1-161-742-00	Ceramic	2200PF	400V
C36	⚠FBC+1-161-742-00	Ceramic	2200PF	400V
		(PLUG)		
CNP1	♦: FBO+1-560-676-00	Pin, Connector (3P)		
		(DIODES)		
D1	⚠FBD+9-983-559-01	Diode S1RBAZ40		
D5	FBD+8-719-300-80	Diode RU1C		
D6	FBD+9-983-560-01	Diode ERC88-009		
		(FUSE)		
F1	⚠FBO+1-532-203-00	Fuse, 2A 250V		
		(TRANSISTOR)		
Q3	⚠FBQ+8-729-801-69	Transistor 2SC3153		
		(RESISTORS)		
R1	FBR+9-983-555-01	Cement	3.3	2W
R2	FBR+1-244-913-00	Carbon	47K	1/2W
R3	FBR+9-983-556-01	Cement	0.22	2W
R4	FBR+1-246-441-00	Carbon	47	1/4W
R33	FBR+1-246-461-00	Carbon	330	1/4W
R55	⚠FBR+1-202-645-00	Solid	1M	1/2W
		(SWITCH)		
SW1	⚠FBS+1-553-834-21	Switch, Power		

Ref. No.	Part No.	Description
		(TRANSFORMERS)
T1	⚠FBL+1-408-941-00	Coil, Choke
T3	⚠FBL+1-437-136-00	Transformer, Drive
T4	⚠FBL+1-437-138-00	Transformer, Switching
T6	⚠FBL+1-408-941-00	Coil, Choke

Ref. No.	Part No.	Description		
	♦: FBP+1-610-645-00	UZ-F Board		
	FBO+2-392-284-00	Terminal, Battery		
		(PLUG)		
CNP2	♦: FBO+9-983-569-01	Pin, Connector (5P)		
		(DIODES)		
D12	FBD+8-719-812-32	Diode TLY123		
D13	FBD+8-719-812-33	Diode TLG123A		
D14	FBD+8-719-981-00	Diode ERC81-004		
		(RESISTORS)		
R49	FBR+1-246-473-00	Carbon	1K	1/4W
R50	FBR+1-246-461-00	Carbon	330	1/4W
		(SWITCH)		
SW2	FBS+9-983-566-01	Switch, Miniature		

MISCELLANEOUS

Ref. No.	Part No.	Description
	FBO+1-557-111-00	Cord, DC Output
	⚠ FBO+9-983-645-01	Cord, Power
CN1	♦: FBO+1-561-777-00	Housing, Connector 3P

ACCESSORIES AND PACKING MATERIALS

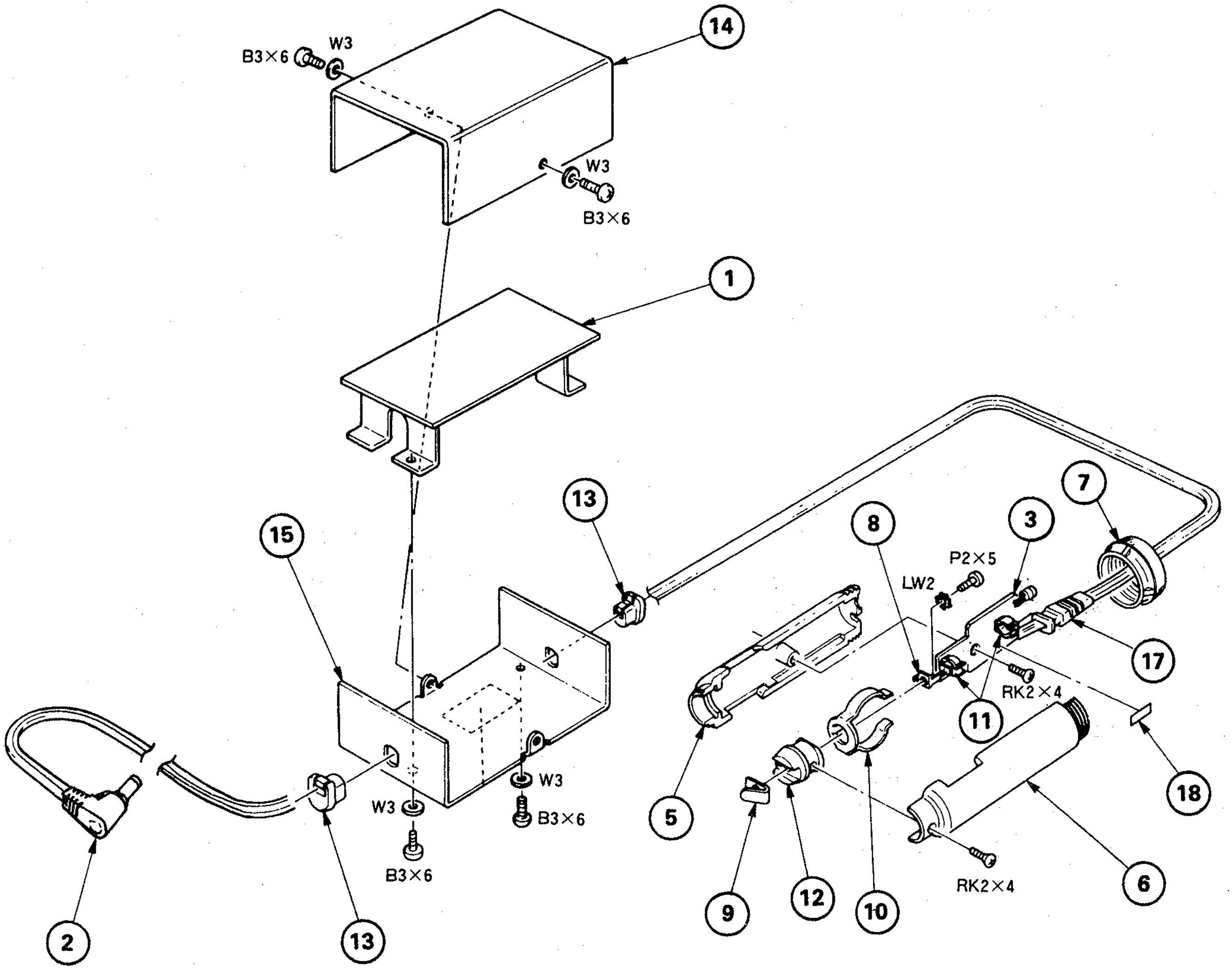
Part No.	Description
FBO+2-366-919-00	Bag, Protection
FBO+2-378-032-51	Individual Carton
FBO+3-773-658-11	Manual, Instruction

PARTS LIST

SANYO

Car Battery Cord

VBF 100



14
B3×6
W3
W3
B3×6
1
13
15
8
3
7
P2×5
LW2
17
RK2×4
11
18
5
W3
W3
B3×6
B3×6
RK2×4
6
9
12
10
2
13

No.	Part No.	Description
1	FBO+1-464-290-00	Converter, DC-DC
2	FBO+1-557-178-00	Cord, DC Output
3	♠: FBP+1-584-244-00	CB Printed Circuit Board
5	FB9+2-226-603-00	Main, Case
6	FB9+2-226-604-00	Lid, Case
7	FB9+2-226-605-00	Cap
8	FB9+2-226-607-00	Clamp
9	FB9+2-226-608-00	Spring, Head
10	FB9+2-226-609-00	Spring, Contact
11	♠: FB9+2-226-610-00	Holder, Fuse
12	FB9+2-226-619-00	Bracket, Head
13	FB9+2-231-019-00	Clamper, Cord
14	FB1+2-261-803-11	Cabinet (Upper)
15	FB9+2-299-201-00	Cabinet (Lower)
17	FB9+3-578-724-00	Bushing
18	♠: FB9+3-701-946-26	Label, Fuse

CCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Description
	♠: FBP+1-584-244-00	CB Printed Circuit Board
		(DIODES)
D1	FBD+8-719-200-02	Diode 10E2
D2	FBD+8-719-800-19	Diode TLR102A
		(FUSE)
F1	⚠ FBO+1-532-349-xx	Fuse 4A
		(RESISTOR)
R1	FBR+1-202-579-00	Solid 1.8K 5% 1/2W

ACCESSORIES

	FBO+3-773-664-11	Manual, Instruction

SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi
Osaka-fu, 570 Japan
Feb./'84/3500 HA Printed in Japan

820

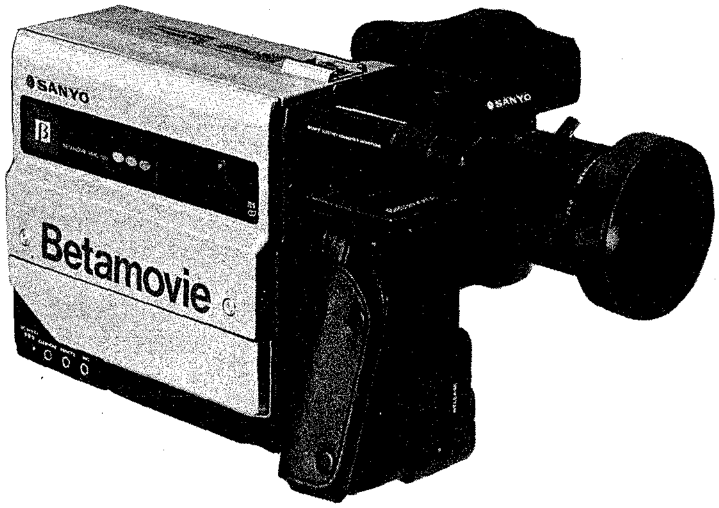
ADJUSTMENT MANUAL

SANYO

Betamovie

VRC100P (PAL)

Beta



WM-11235

820

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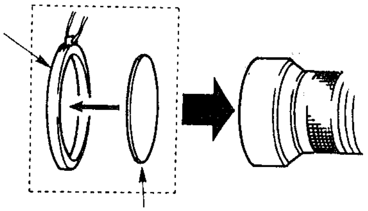
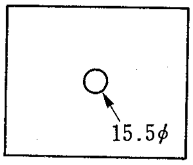
SECTION 1
PREPARATION BEFORE ADJUSTMENT (CAMERA SECTION)

1-1. LIST OF SERVICING JIGS

Oscilloscope; digital electronic voltmeter (4 digits); AC adapter; adjusting screwdriver; L-wrench; level; special purpose color monitor.

Ref No.	Name	Part code	Use
J 1	Jig for oscillating 5.4MHz Note: To be remodeled from a 4.5MHz oscillator jig.	J 6023 420 A ※ Crystal replacement	H size adjustment
	Part requred for remodeling: (5.4MHz crystal)	J 6080 809 A	
J 2	Red filter	J 6080 059 A	Focus adjustment, HV phase correction adjustment
J 3	ND filter 0.4	J 6080 806 A	x2 beam adjustment, LLA adjustment
	ND filter 0.1	J 6080 807 A	LLA adjustment
	ND filter 1.0	J 6080 808 A	LLA adjustment
J 4	Pattern box PTB-100 (For 90–130V ac) PTB-200 (For 190–240V ac)	J 6020 490 A J 6020 680 A	
J 5	Color chart	J 6020 250 A	
J 6	Signal converter BMCJ-888P	J 6080 820 A	x2 beam adjustment, x5 beam adjustment, H size adjustment, flange back adjustment, V size adjustment, V centering adjustment
J 7	2.2Ω standard resistor	J 6080 812 A	Heater constant current adjustment
	The following jigs must be produced: (1) Black cap  To be cut from a sheet of black paper.		H balance adjustment, V balance adjustment, bias light adjustment, H size adjustment, dark adjustment, AGC weighting adjustment, iris weighting adjustment, burst level adjustment, carrier balance adjustment
	(2) High brightness pattern Bond a sheet of black paper to a cardboard and make a hole 15.5mm in diameter at the center of the paper. 		x2 beam adjustment, x5 beam adjustment, knee adjustment

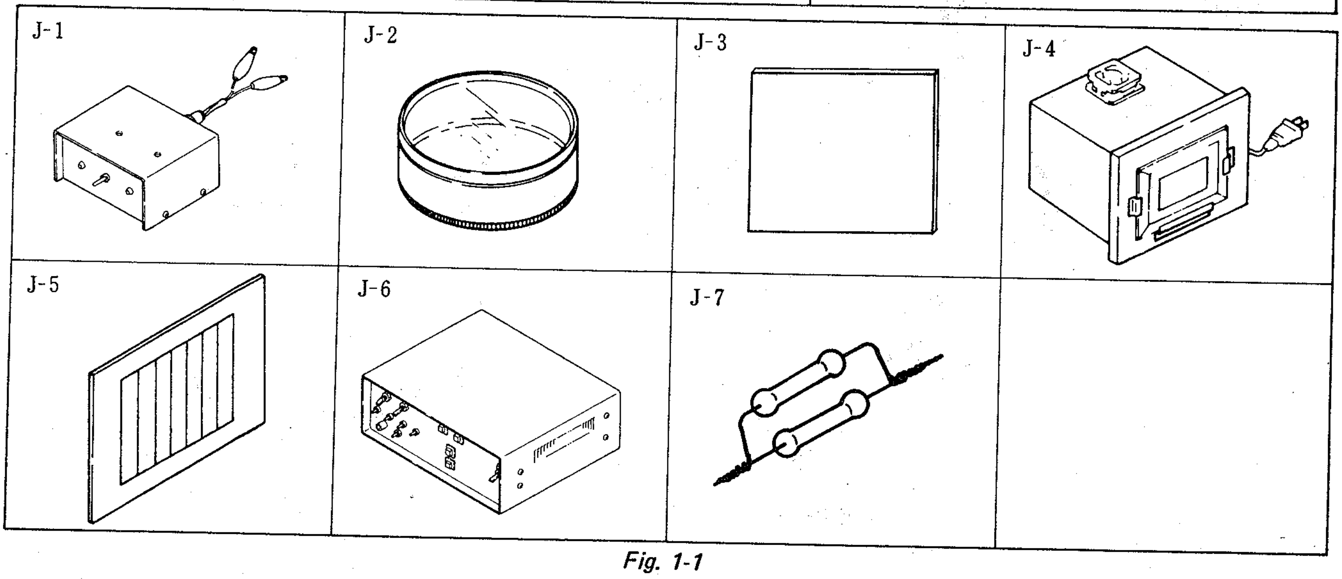


Fig. 1-1

1-2. PREPARATION

1) Set filter selector to ☼ (indoor).
2) Also perform the white balance if there are no special notes ("W" is to be turned off).

1-3. CONNECTION DIAGRAM

1) Set up pattern box and Betamovie as shown below.
2) Level the Betamovie and the pattern box, and place the in same height.

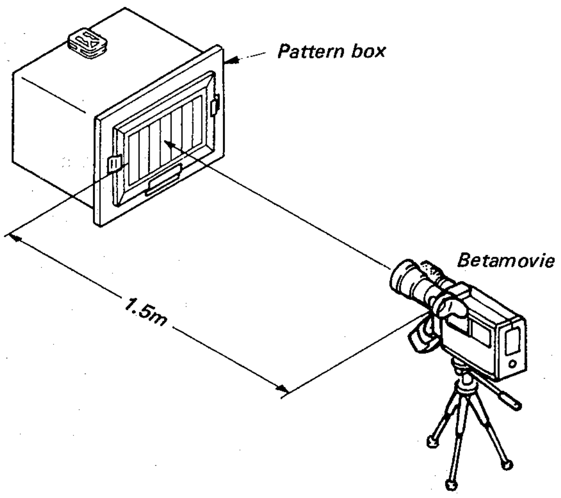

Pattern box
Betamovie
1.5m

Fig. 1-2

3) Connect Betamovie, signal converter BMCJ-888P and special purpose monitor together as shown below.

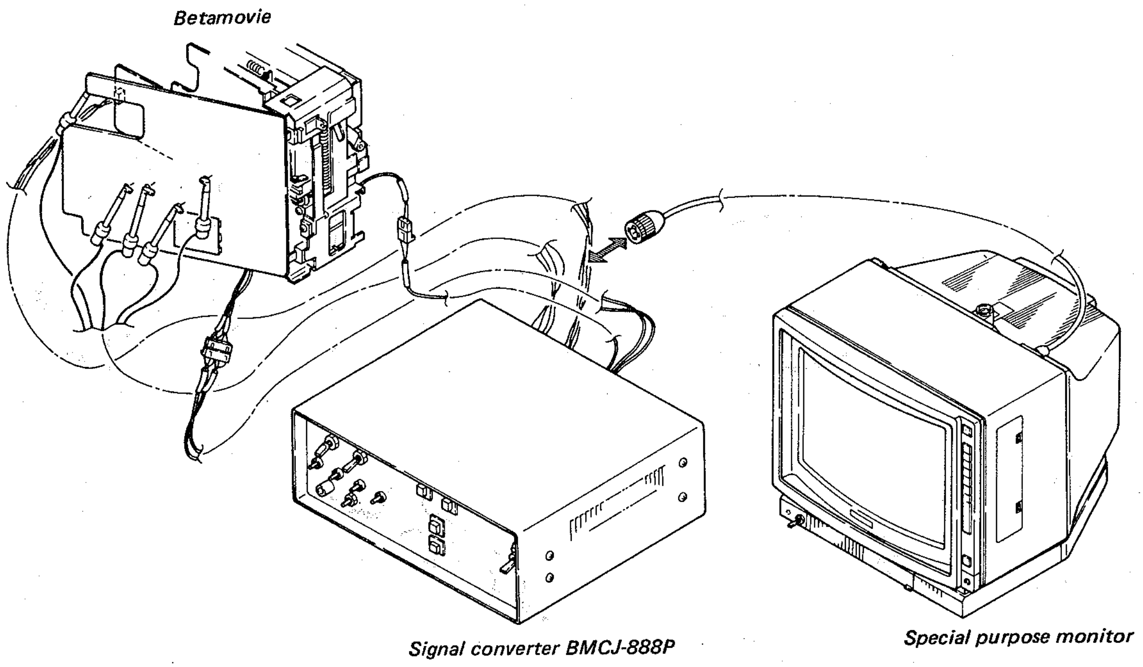

Betamovie
Signal converter BMCJ-888P
Special purpose monitor

Fig. 1-3

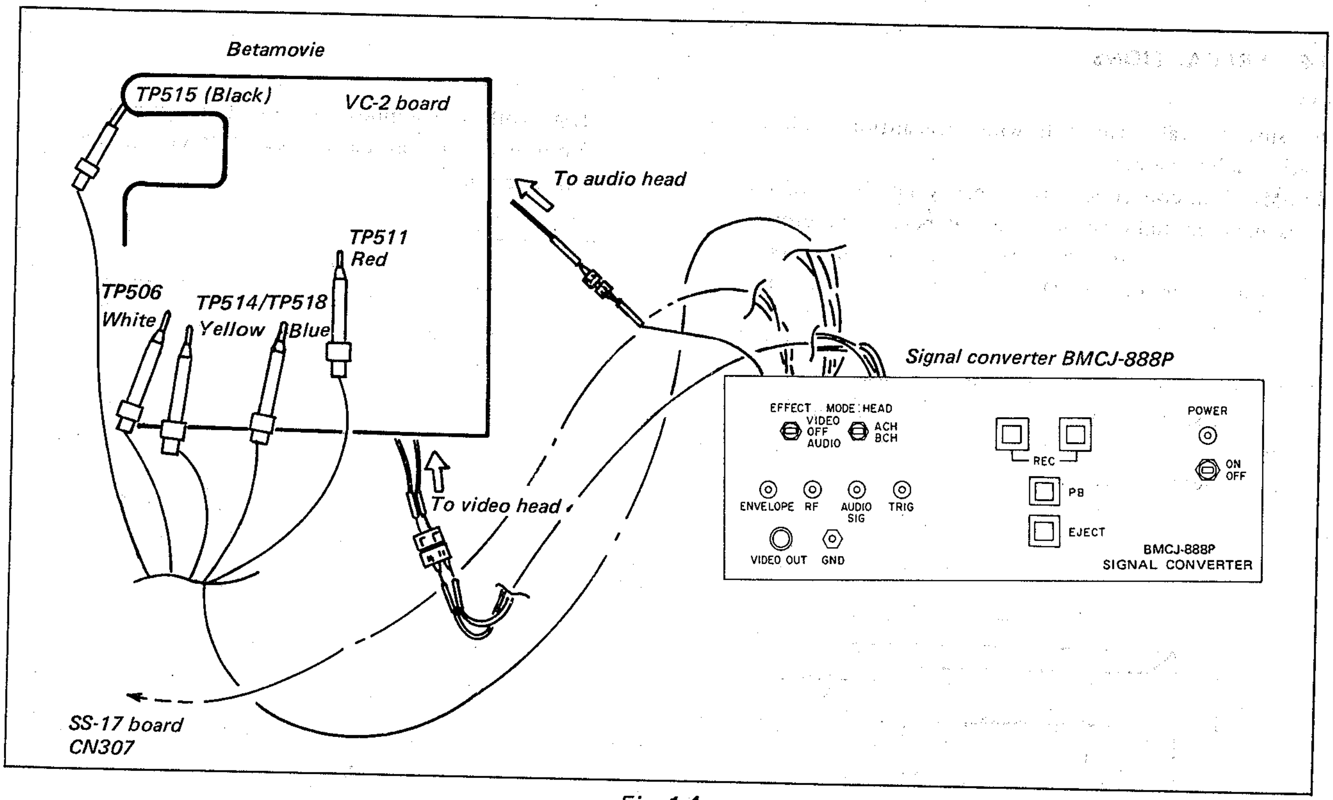

Betamovie
TP515 (Black)
VC-2 board
To audio head
TP511
Red
TP506
White
TP514/TP518
Yellow
Blue
To video head
Signal converter BMCJ-888P
EFFECT
MODE
HEAD
VIDEO
OFF
AUDIO
ACH
BCH
REC
POWER
ON
OFF
PB
EJECT
ENVELOPE
RF
AUDIO SIG
TRIG
VIDEO OUT
GND
BMCJ-888P
SIGNAL CONVERTER
SS-17 board
CN307

Fig. 1-4

1-4. EYESIGHT ADJUSTMENT

Adjusting Procedure:

1) Direct camera toward a bright, plain object such as white paper.
2) Turn the eyesight adjusting knob so as to make finder frame clearly recognizable.

1-5. PROCEDURE FOR DETERMINING MONITOR CENTER (RASTER CENTER) OF SPECIAL PURPOSE MONITOR FOR BETAMOVIE

This is required for "OVF and optical axis confirmation" and "V centering adjustment".

Note: Use a normal set for the determination.

Oscilloscope: TP506
Object: High brightness pattern
Zoom lever: 30 mm

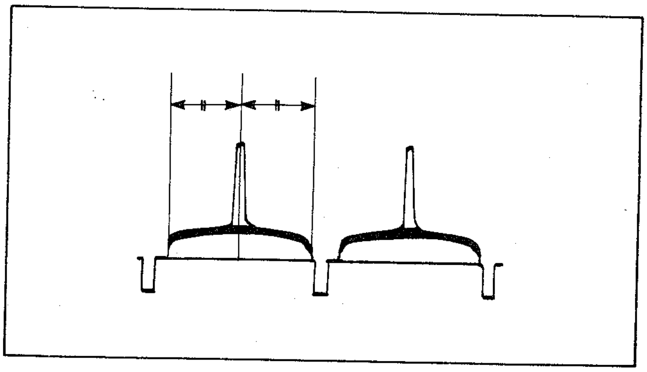


Fig. 1-5

1) Oscilloscope TIME/DIV: 20μsec (H)
   Adjust universal head to the left or right so as to position the spot portion to the center.
2) Oscilloscope TIME/DIV: 5msec (V)
   Adjust universal head upward or downward so as to position the spot portion to the center.

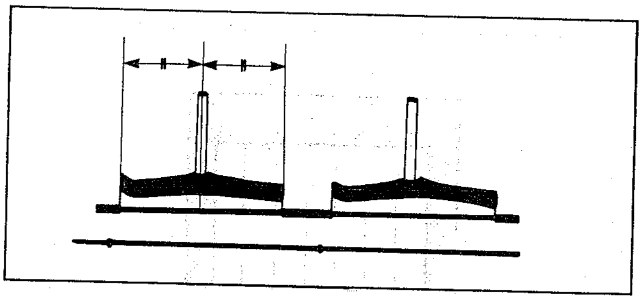


Fig. 1-6

3) Use the center of spot displayed on the monitor screen as monitor center. (Show a mark on the monitor center')

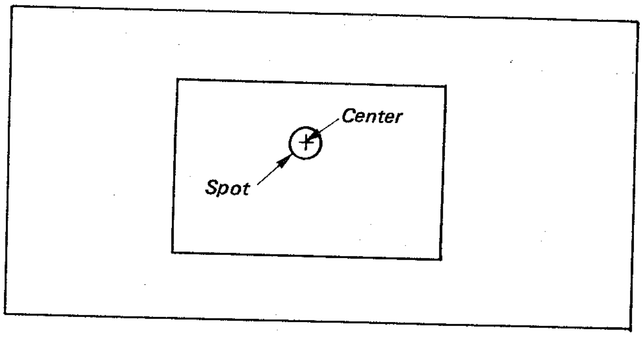

Center
Spot

Fig. 1-7

1-6. PRECAUTIONS

(1)
Be sure to take the following precautions before starting adjustment:

1) SMF Trinicon tube may be easily burned if there is incident light before a rise of beam. Therefore, be sure to prohibit the entry of light in lens before beam adjustment. (Do not direct camera to a light source.)

2) Adjust color pattern by fully aligning to the bottom side. (If this is not performed, the weighting circuit begins to operate and normal iris and AGC operation will not occur.)

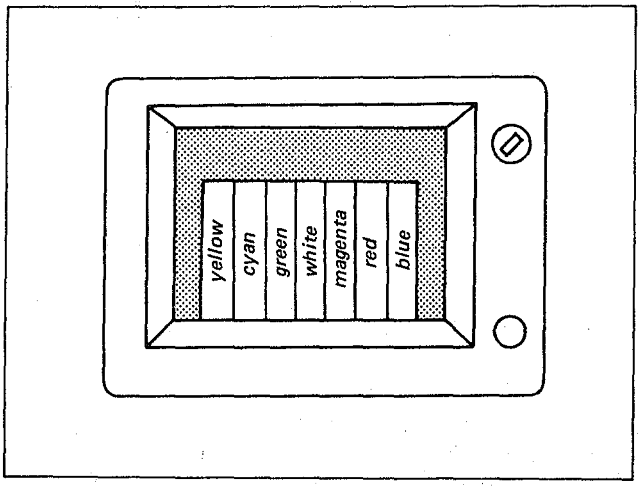


Fig. 1-8

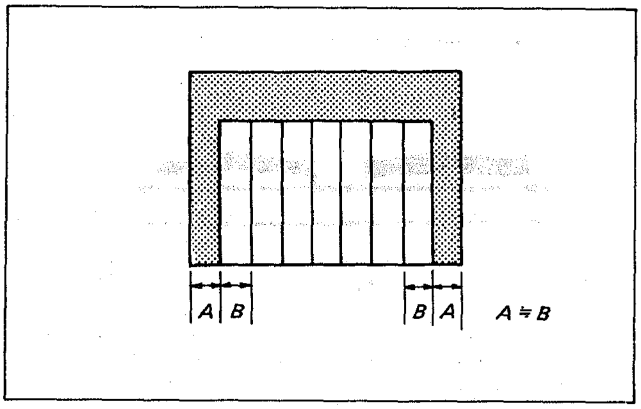


Fig. 1-9

(2) VC-2 board
High voltage is applied to the hatched portion. Your may have an electric shock if you touch this portion.

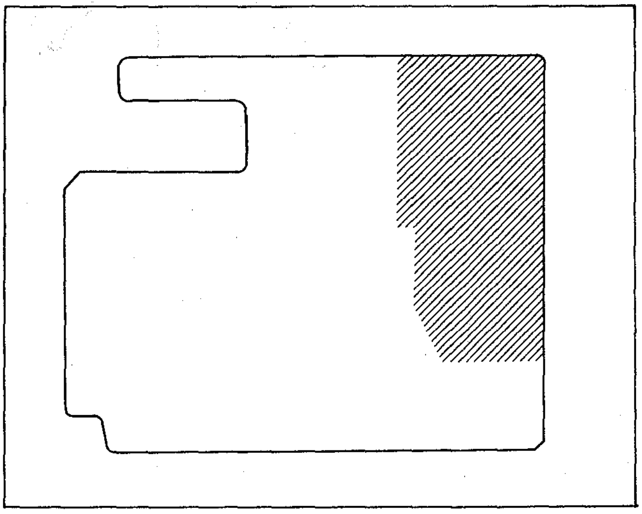
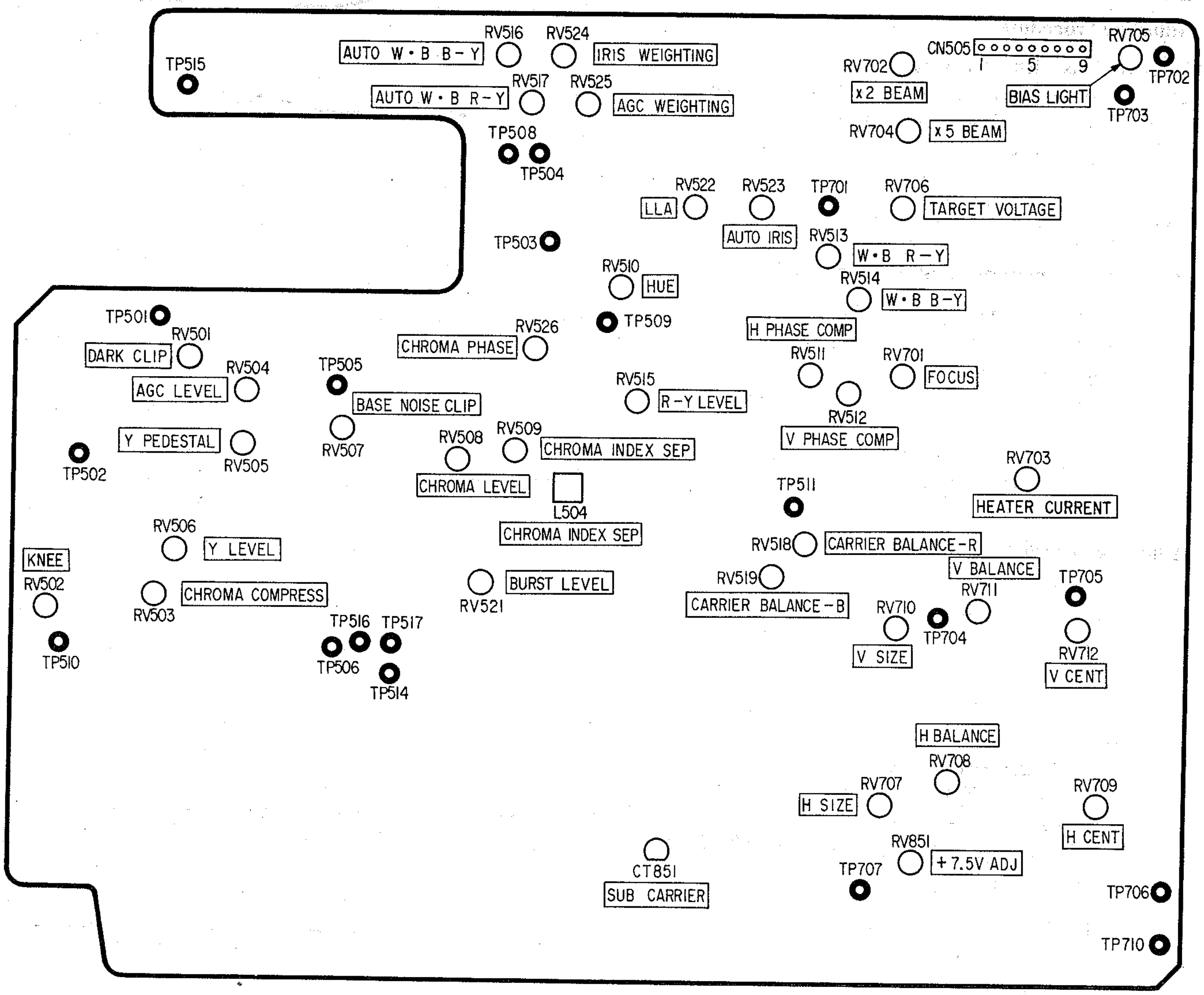


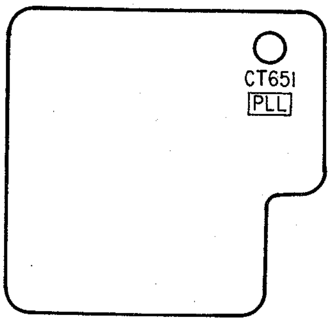
Fig. 1-10

1-7. RV AND TP LOCATION

VC-2 board (printed face side)


TP515
RV516
RV524
AUTO W・B B−Y
IRIS WEIGHTING
RV517
RV525
AUTO W・B R−Y
AGC WEIGHTING
TP508
TP504
RV702
CN505
1
5
9
RV705
TP702
x2 BEAM
BIAS LIGHT
TP703
RV704
x5 BEAM
RV522
RV523
TP701
RV706
LLA
TARGET VOLTAGE
AUTO IRIS
RV513
W・B R−Y
TP503
RV510
HUE
RV514
W・B B−Y
TP501
RV501
DARK CLIP
RV526
CHROMA PHASE
TP509
H PHASE COMP
RV504
AGC LEVEL
TP505
BASE NOISE CLIP
RV515
R−Y LEVEL
RV511
RV701
FOCUS
RV512
Y PEDESTAL
RV505
RV507
RV508
RV509
CHROMA INDEX SEP
V PHASE COMP
TP502
CHROMA LEVEL
L504
TP511
RV703
HEATER CURRENT
RV506
Y LEVEL
CHROMA INDEX SEP
RV518
CARRIER BALANCE−R
KNEE
RV502
CHROMA COMPRESS
RV503
BURST LEVEL
RV521
RV519
V BALANCE
RV711
CARRIER BALANCE−B
RV710
TP704
TP705
TP516
TP517
TP506
TP514
TP510
V SIZE
RV712
V CENT
H BALANCE
RV708
RV707
H SIZE
RV709
H CENT
RV851
+7.5V ADJ
CT851
SUB CARRIER
TP707
TP706
TP710

GC-3 board (printed face side)



SECTION 2
ADJUSTMENTS (CAMERA SECTION)

2-1. ADJUSTMENT OF 7.5V POWER SUPPLY AND HEATER

2-1-1. Adjustment of +7.5V Power Supply Voltage

Adjusting Procedure:

1) Cover lens with a black cap.
2) Connect ⊕ probe of digital voltmeter to TP706 (7.5V line) and ⊖ probe to TP710.
3) Turn RV851 so as to adjust the voltage at that time to 7.54V ± 0.075V.

Adjusted value: 7.54V ± 0.075V

2-1-2. Adjustment of Constant Current of Heater

Note: This adjustment should be performed only when the following parts were replaced or adjusted:
(Replacement of HV701, adjustment of RV851, replacement of R730, R762, R763, RV703)
* Only the confirmation is necessary when replacing trinicon tube.

Adjusting Procedure:

1) Remove the socket of trinicon tube.
2) Attach 2.2Ω standard resistor and digital voltmeter as shown below.
3) Turn RV703 so as to adjust the voltage to 682 ±6mV.

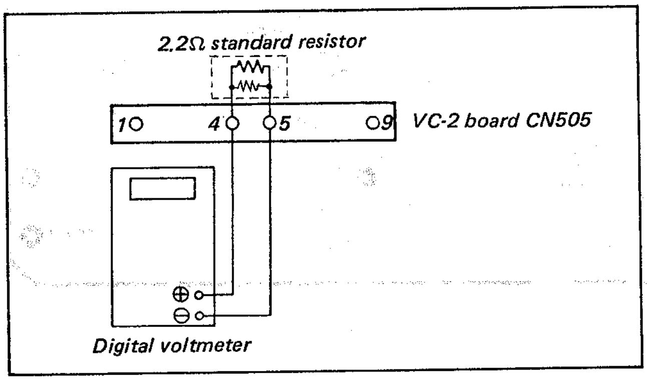


Fig. 2-1

2-2. ADJUSTMENT OF DEFLECTION SYSTEM

2-2-1. H Balance Adjustment

Oscilloscope: CH-1: TP702 } ADD mode
CH-2: TP703 }
Note: Oscilloscope range 2V/DIV

Adjusting Procedure:

1) Cover lens with a black cap.
2) Turn and adjust RV708 so as to make the waveform parabolic as shown below.

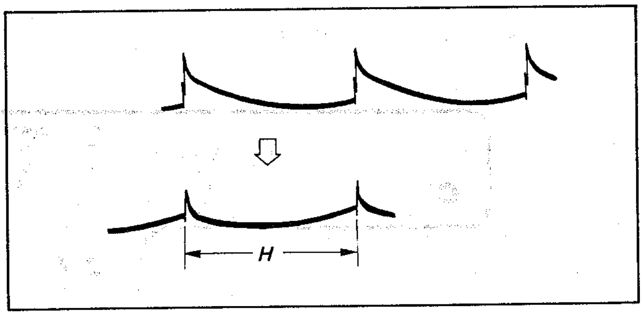


Fig. 2-2

2-2-2. Adjustment of V Balance

Oscilloscope: CH-1: TP704 } ADD mode
CH-2: TP705 }
Note: Oscilloscope range 2V/DIV

Adjusting Procedure:

Turn and adjust RV711 so as to make the waveform straight as shown below.

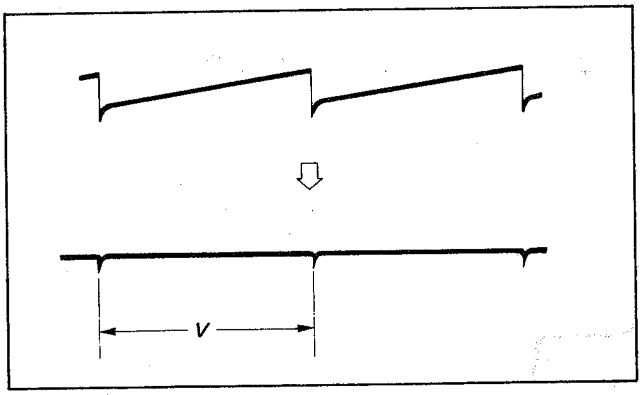


Fig. 2-3

2-2-3. Target Voltage Adjustment

Adjusting Procedure:

1) Connect ⊕ probe of digital voltmeter to TP701 and ⊖ probe to TP515 respectively.
2) Turn RV706 and adjust voltage to 49 ± 2V.

Note: Turn RV706 little by little clockwise starting from its utmost end on the printed face of the board.

2-2-4. Bias Light Adjustment

Oscilloscope: TP501

Adjusting Procedure:

1) Cover lens with a black cap.
2) Adjust the level to 20 ± 8mVp-p using RV705 as shown below.

Note: Temporarily adjust beam prior to the bias light adjustment.

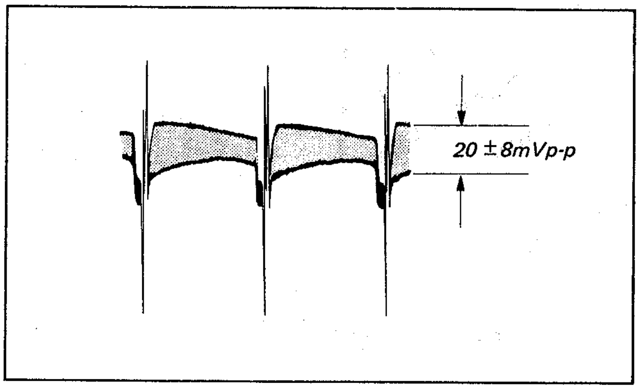
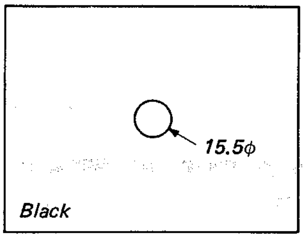


Fig. 2-4

2-2-5. x2 Beam Adjustment

Oscilloscope: TP501

Object to be shot: High brightness pattern (shown below).



Adjusting Procedure:

1) Turn RV702 fully counterclockwise and RV704 fully clockwise on the printed face.
2) Cover lens with ND-0.4 filter.
3) Set zoom lever to the utmost telephoto end.
4) Adjust output waveform to 480 ± 50mV using RV702.

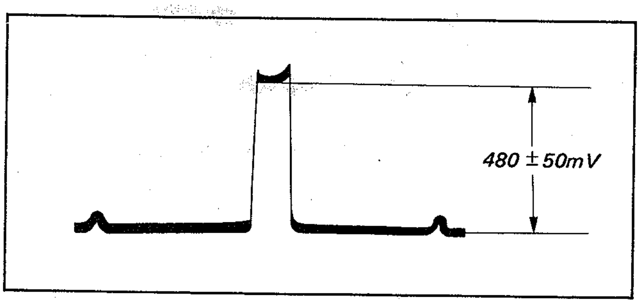
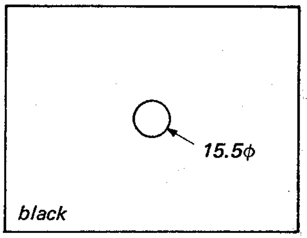


Fig. 2-5

2-2-6. x5 Beam Adjustment (ABO)

Oscilloscope: TP501

Object to be shot: High brightness pattern (shown below).



Adjusting Procedure:

1) Set zoom lever to the utmost telephoto end.
2) Turn RV704 counterclockwise on the printed face and adjust the peak-to-peak value of the waveform shown in Fig. 2-6 to 1.2 ± 0.1Vp-p.

Note: Make this adjustment more than 1 minute after turning power on.

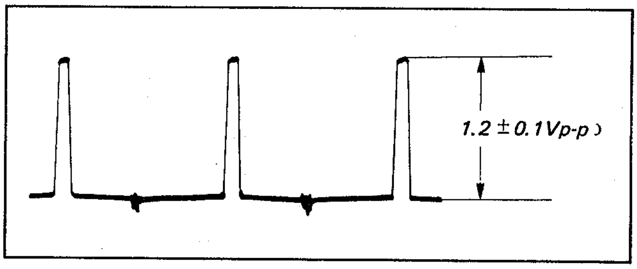


Fig. 2-6

2-2-7. Focus Adjustment

Oscilloscope: TP501

Object to be shot: Fully white pattern

Adjusting Procedure:

1) After shooting the white pattern fully on the picture frame, cover the lens with a red filter.
2) Turn RV701 so as to make the carrier component of the waveform shown below maximum.

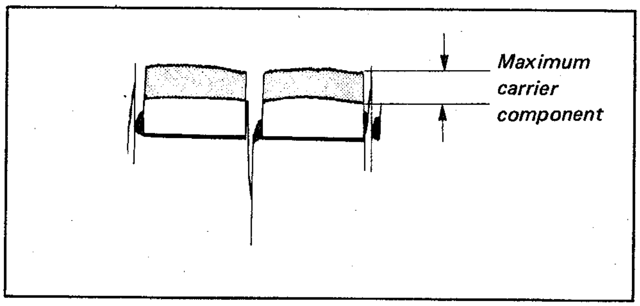


Fig. 2-7

2-2-8. H Size Adjustment

Connect 5.4MHz oscillator jig as shown below.

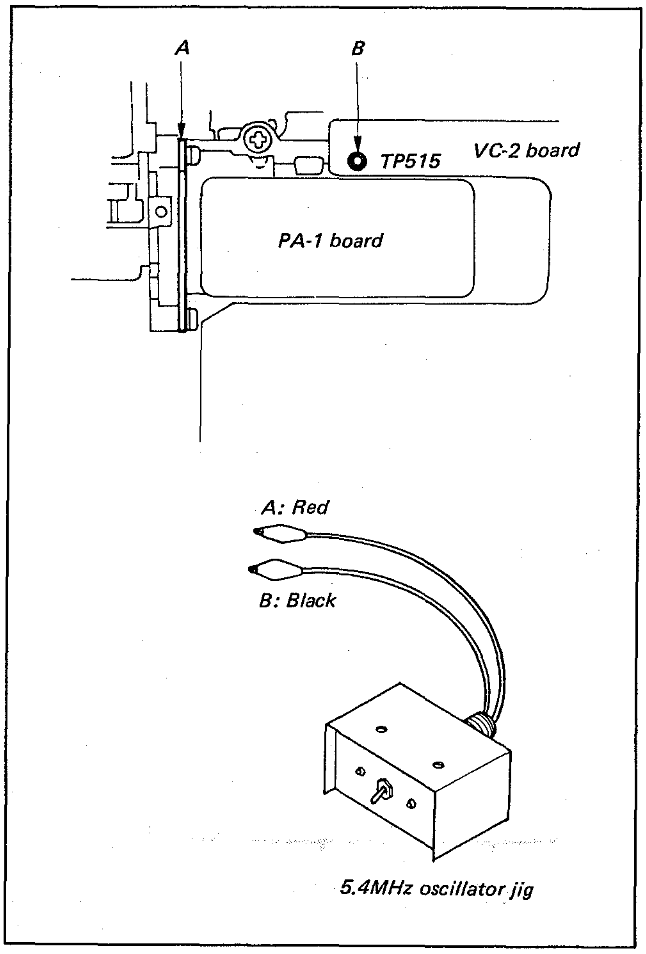

A
B
TP515
VC-2 board
PA-1 board
A: Red
B: Black
5.4MHz oscillator jig

Fig. 2-8

Adjusting Procedure:

1) Cover the lens with a white cap.
2) While observing the color monitor, adjust RV707 so as to make the number of beats the smallest laterally as shown below, and confirm that the number of beats is less than 6.7.

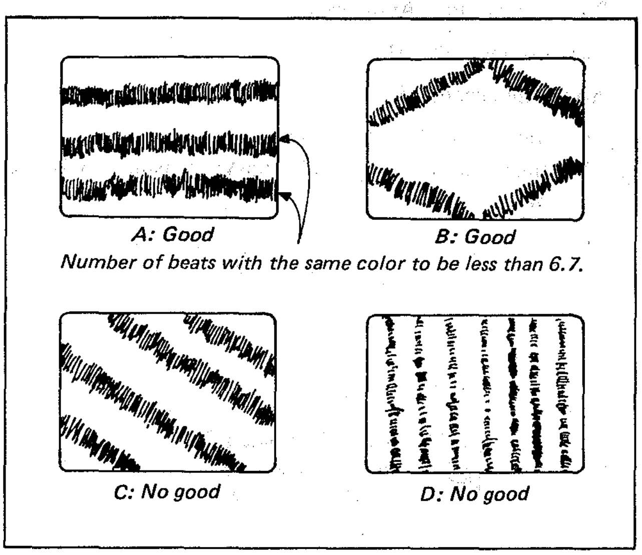

A: Good
B: Good
Number of beats with the same color to be less than 6.7.
C: No good
D: No good

Fig. 2-9

2-2-9. H Centering Adjustment

Oscilloscope: CH-1: TP501
CH-2: TP511

Object to be shot: Fully white pattern

Adjusting Procedure:

Turn RV-709 fully counterclockwise first on the pattern face and then gradually turn it clockwise so as to make the width of black mask of waveform shown in Fig. 2-10 equal to 2.9 ± 0.4μsec from the rise of HD pulse shown below.

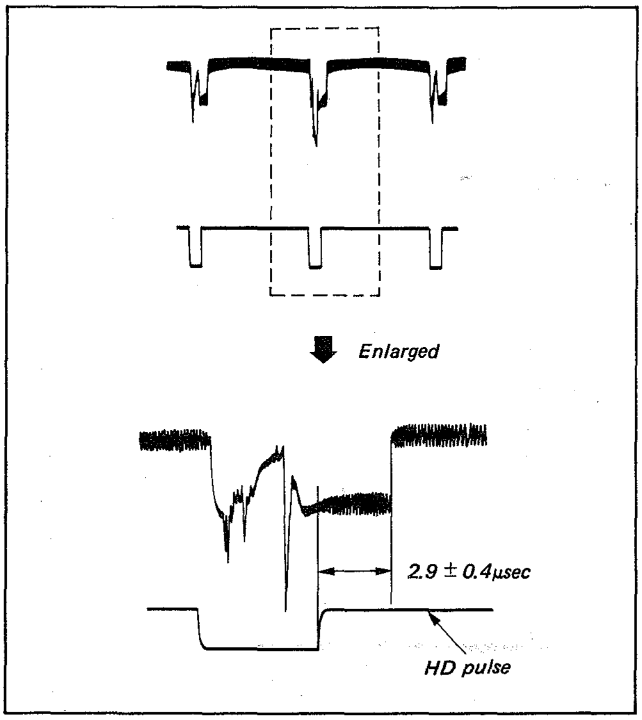


Fig. 2-10

2-2-10. Adjustment of Levelness

1) Place the camera and object in level, and focus the lens on the object.

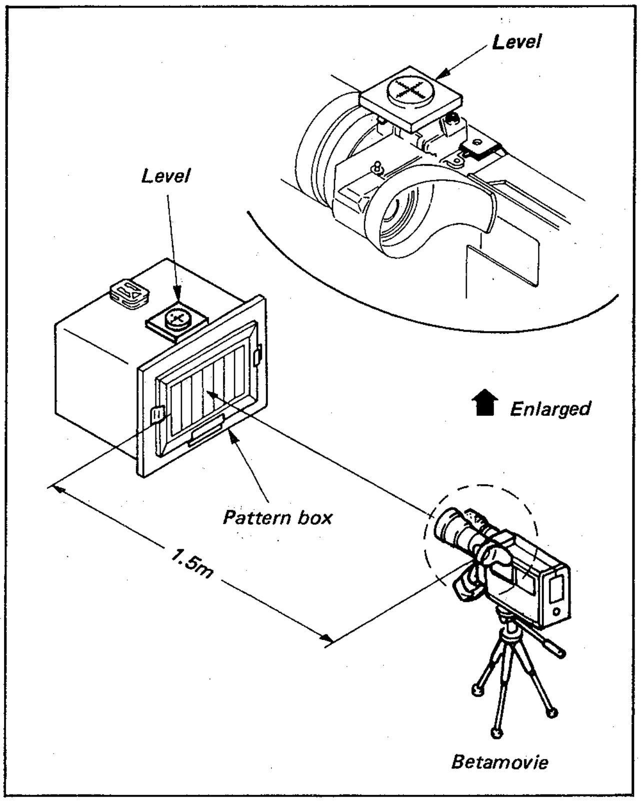

Level
Level
Enlarged
Pattern box
1.5m
Betamovie

Fig. 2-11

2) Loosen the clamp screw of Trinicon tube with a hexagon key wrench, and turn level adjusting pin with a regular screwdriver so as to make the Trinicon tube level.

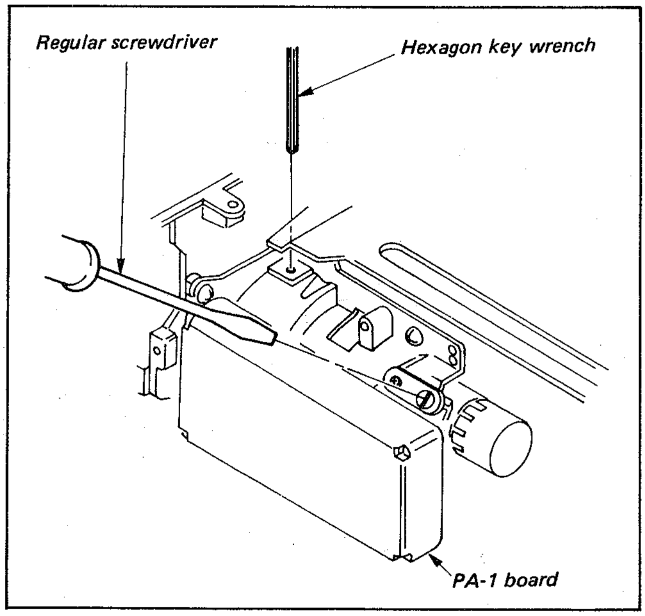

Regular screwdriver
Hexagon key wrench
PA-1 board

Fig. 2-12

2-2-11. Flange Back Adjustment (F. B.)

Adjusting Procedure:

1) Set the focus ring of lens to 1.5m.
2) Set zoom ring to a wide angle end of 9mm.
3) Loosen lens lock screw A.
4) Slightly rotate lens with a screwdriver having a narrow blade from C-portion.
5) Adjust the adjust screw of B-portion so as to make the clearest at the center of monitor.
6) Tighten the lens lock screw A.
7) When the focus ring is rotated to make the center the clearest, the position of the focus ring must be within the standard range.
8) If the step 7 fails, repeat steps 3 to 6.

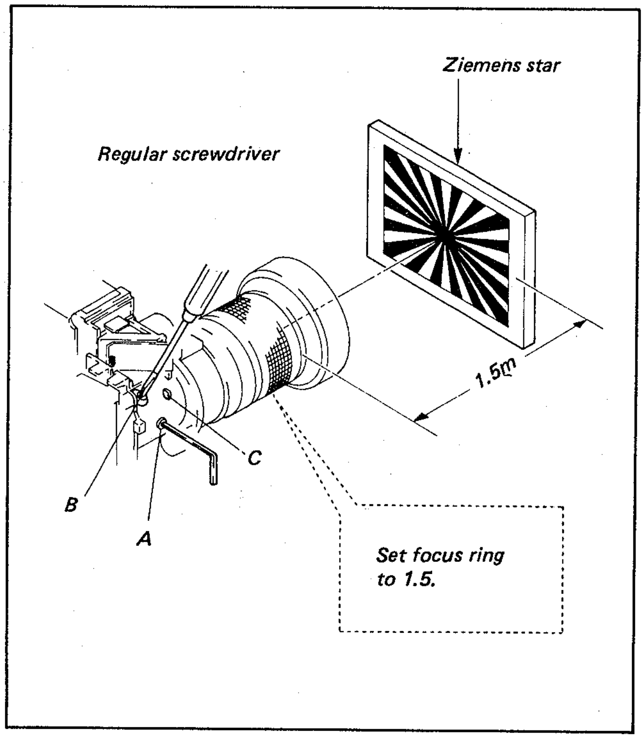

Ziemens star
Regular screwdriver
1.5m
C
B
A
Set focus ring to 1.5.

Fig. 2-13

Note: Start adjustment only after moving the zoom lever back and forth more than once between wide angle end and telephoto end.

Standard range of step 7: 1.2 | 1.5 | 2

2-2-12. Confirmation of Horizontal Optical Axis with OVF

Object to be shot: Color pattern

Adjusting Procedure:

1) Set the zoom lever to the telephoto end.
2) Adjust the universal head so as to align the pattern box center with monitor center.
3) Adjust the adjust screw so as to align the finder with pattern box center.

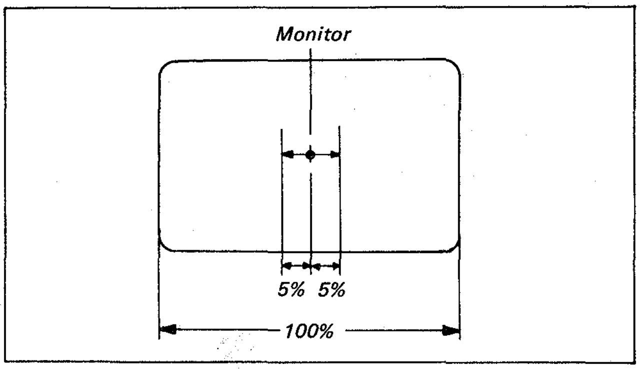


Fig. 2-14

Standard:

When the finder center is aligned with pattern box center, the deviation on the monitor must be within ±5%.

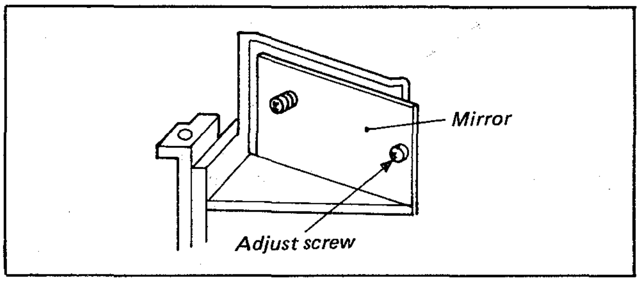
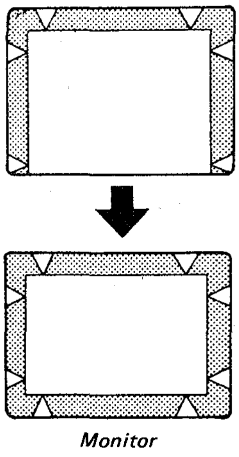


Fig. 2-15

2-2-13. V Size Adjustment



Pattern: Fully white pattern
Align the pattern with picture frame of monitor as shown at the left by zooming and moving the universal head.

Turn RV710 of VC-2 board so as to align the bottom of pattern with the bottom of monitor.

Fig. 2-16

2-2-14. Adjustment of V Centering

Show marks to the centers of white pattern and monitor screen. Set the zoom lever to telephoto and focus the lens.

Adjusting Procedure:

1) Align the center of pattern with the center of lens by moving the universal head, set the zoom to wide angle, and align the center of screen to the center of white pattern.
2) If the center of screen is deviated from the center of white pattern after setting the zoom to telephoto, then deviate the center of fully white pattern by one-fifth of center-to-center distance A in the direction of deviation by adjusting RV712.
3) After setting the zoom to wide angle, align the center of fully white pattern with the center of lens by moving the universal head, and align the center of the pattern with the center of screen.
4) Set the zoom to telephoto, and confirm that the deviation between the center of screen and the center of white pattern is less than 1/25 of screen length ℓ.

Note: If the deviation is not less than 1/25 of ℓ, then repeat the adjustment again.

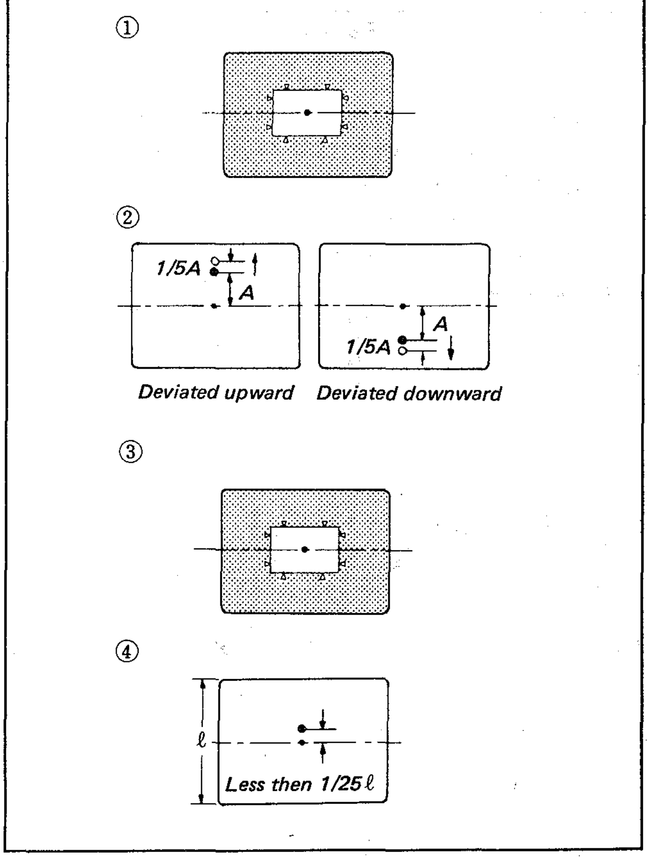


Fig. 2-17

2-3. ADJUSTMENT OF Y SYSTEM

2-3-1. Adjustment of Iris Weighting

Oscilloscope: TP504

Adjusting Procedure:

1) Cover the lens with a black cap.
2) Turn RV524 so as to align the point where the voltage is 100mV lower than the fully voltage value with the point of 4.6 ± 0.2mS as shown in Fig. 2-18.

Note: LLA in the finder must have been turned on.

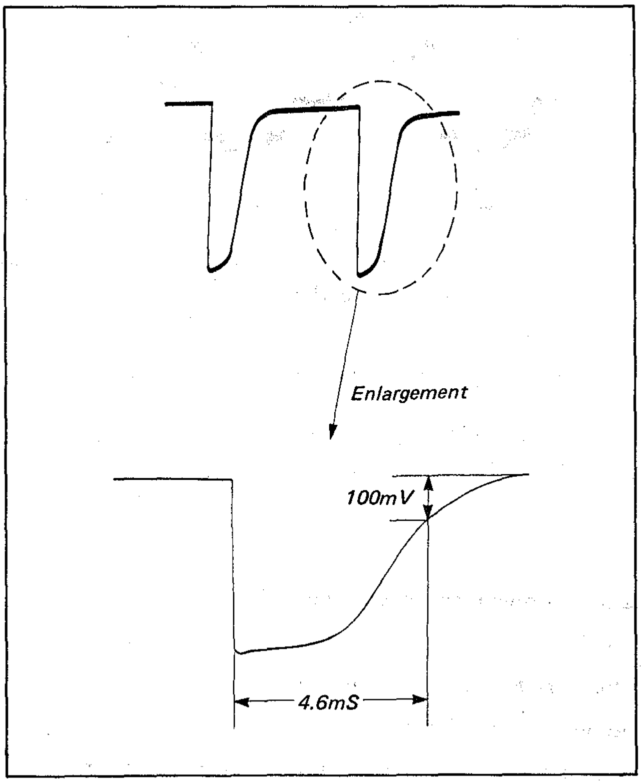

Enlargement
100mV
4.6mS

Fig. 2-18

2-3-2. Adjustment of Auto Iris

Oscilloscope: TP501

Object to be shot: Color pattern

Adjusting Procedure:

Turn RV523 so as to make the peak-to-peak value of waveform of Fig. 2-19 equal to 240 ± 30mVp-p.

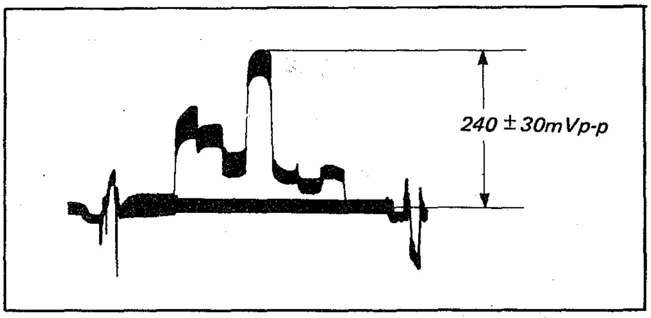


Fig. 2-19

2-3-3. Adjustment of Dark Clip

Oscilloscope: TP502, AC mode

Adjusting Procedure:

1) Cover the lens with a black cap.
2) Turn RV501 so as to make the clamped portion during blanking equal to 0V.

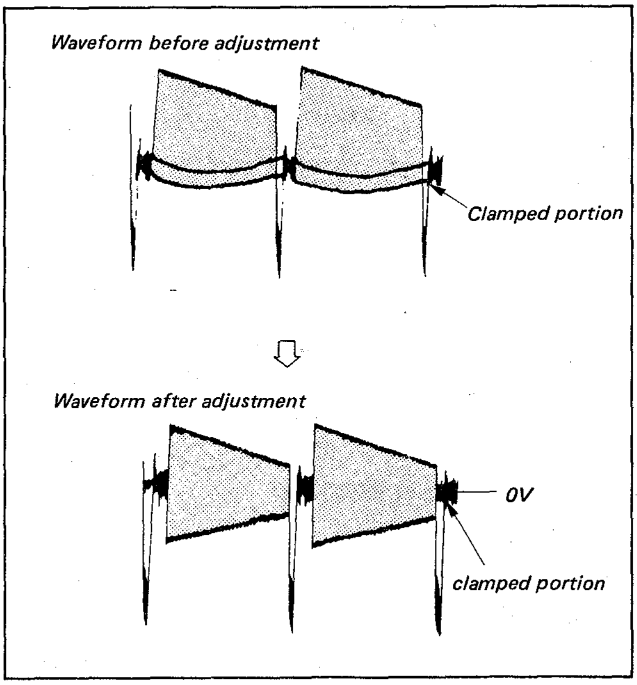

Waveform before adjustment
Clamped portion
Waveform after adjustment
0V
clamped portion

Fig. 2-20

2-3-4. Adjustment of AGC Weighting

Oscilloscope: TP503

Adjusting Procedure:

1) Cover the lens with a black cap.
2) Turn RV525 of VC-2 board so as to align the point where the voltage is 200mV lower than the full voltage value with the point of 4.6±0.2mS as shown below. (Fig. 2-21)

Note: LLA in the finder must have been turned on.

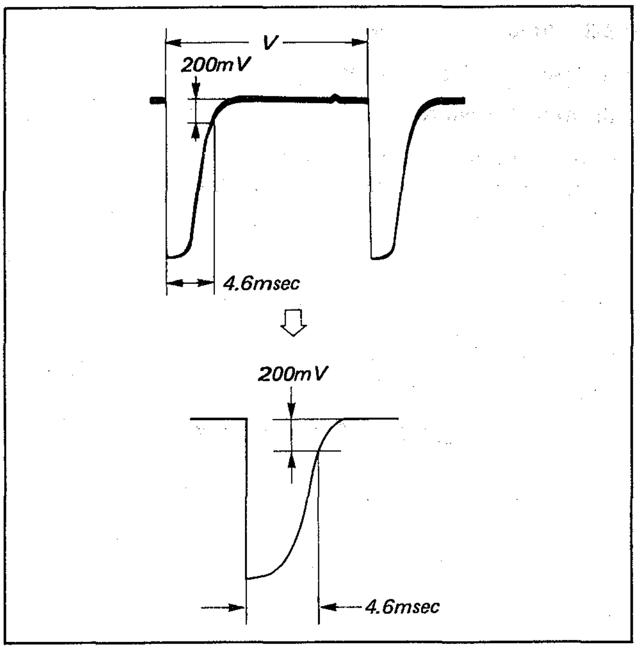


Fig. 2-21

2-3-5. Adjustment of AGC Level

Oscilloscope: TP502

Object to be shot: Color pattern

Adjusting Procedure:

Turn RV504 so as to make the peak-to-peak value of waveform shown below equal to 1.5 ± 0.2V.

Note: This value should be observed 3 to 4 seconds after the adjustment.

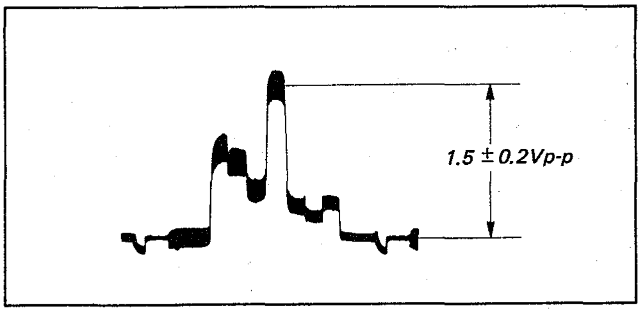


Fig. 2-22

2-3-6. Adjustment of Y Pedestal and Y Level

Oscilloscope: TP506

Object to be shot: Color pattern

Adjusting Procedure:

1) Turn RV505 so as to make the pedestal level equal to 40 ± 5mV as shown below.
2) Turn RV506 so as to make Y level equal to 700 ± 100mV as shown below.

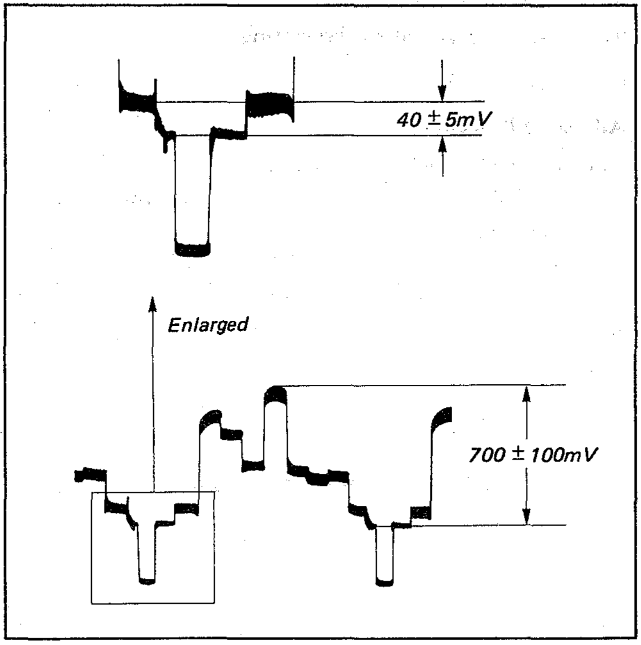


Fig. 2-23

3) Check the pedestal again and confirm that it is within the standard range.
4) If the pedestal is not within the standard range, readjust RV505 and RV506 and repeat the steps 1 and 2.

2-3-7. Adjustment of Base Noise Clip

Oscilloscope: TP505

Object to be shot: Color pattern

Adjusting Procedure:

Turn RV507 so as to make level equal to 10 ± 5mV as shown below.

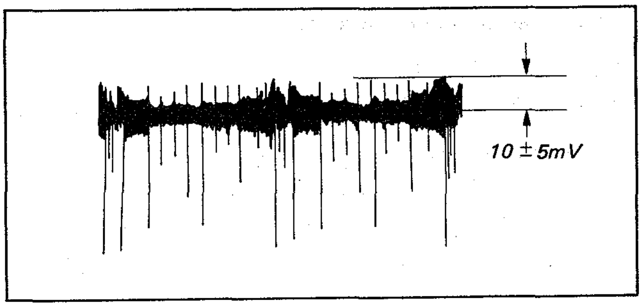


Fig. 2-24

2-3-8. Knee Adjustment

Oscilloscope: TP506

Object to be shot: High brightness pattern (shown below)

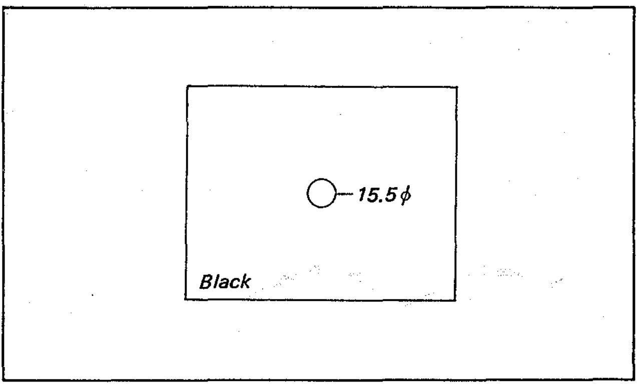


Fig. 2-25

Adjusting Procedure:

1) Set the zoom to telephoto end.
2) Turn RV502 so as to make the value of waveform of Fig. 2-26 equal to 900 ± 100mV.

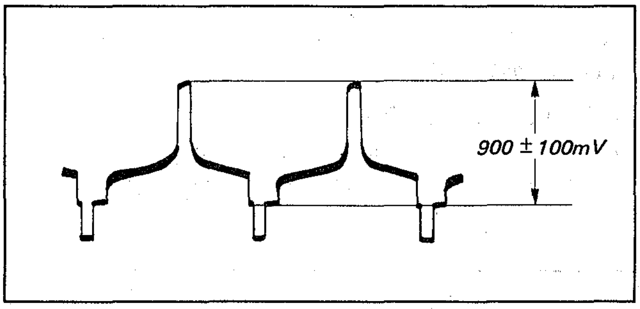


Fig. 2-26

2-3-9. LLA Adjustment

Object to be shot: Color pattern

Adjusting Procedure:

1) Cover the lens with ND filters 0.4 and 1.0 and adjust RV522 on VC-1 board so as to turn on LLA lamp.
2) Remove ND filters 0.4 and 1.0 from the front of lens.
3) Cover the lens with ND filters 0.1 and 1.0 and confirm that the LLA lamp will be turned off. If it does not, adjust RV522 so as to turn off LLA lamp.
4) Repeat steps 1 and 3 once again for confirming the adjustment.

2-4. ADJUSTMENT OF CHROMA SYSTEM

2-4-1. Adjustment of Burst Level

Oscilloscope: TP514

Adjusting Procedure:

1) Cover the lens with a black cap.
2) Turn RV521 so as to make the burst level equal to 280 ± 10mV as shown below.

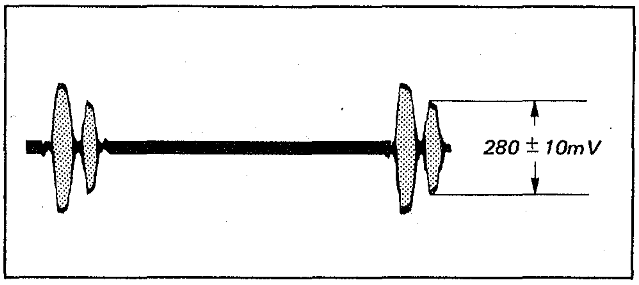


Fig. 2-27

2-4-2. Adjustment of HV Phase Correction

Oscilloscope: CH-1: TP509 } X-Y mode
CH-2: TP508 }

Object to be shot: White pattern

Adjusting Procedure:

1) Shoot the white pattern with 5% cut.

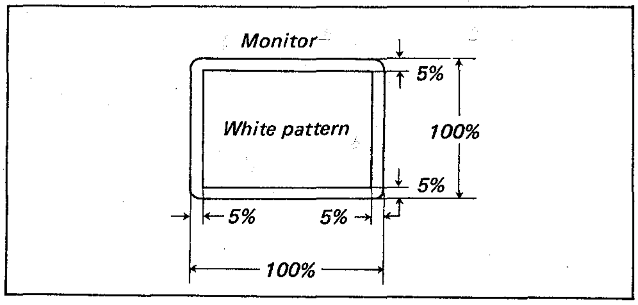


Fig. 2-28

2) Cover with a red filter.
3) Adjust with RV511 and RV512 so as to make the size of spot minimum. (Fig. 2-29)

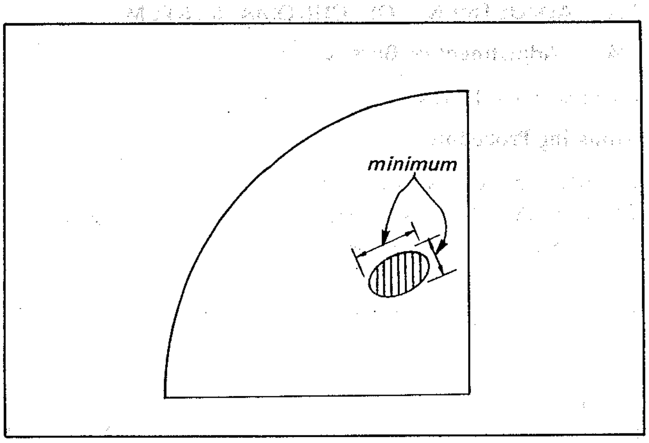


Fig. 2-29

2-4-3. Adjustment of Chroma Index Separation

Oscilloscope: CH-1: TP509 } X-Y mode
CH-2: TP508 }

Object to be shot: Color pattern

Adjusting Procedure:

Adjust with RV509 and L504 alternately to overlap spots as many as possible.

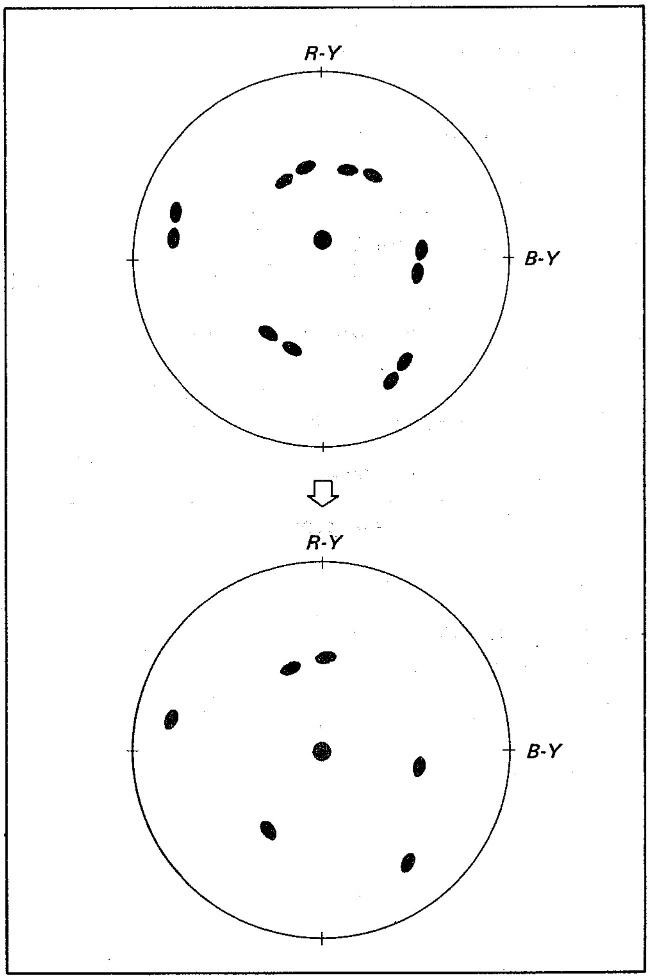


Fig. 2-30

2-4-4. Adjustment of Chroma Compression

Oscilloscope: TP510

Object to be shot: Color pattern

Adjusting Procedure:

1) Set filter selector to ☼ (indoor), and depress the white balance button to turn off W in the finder.
2) Cover the lens with a black cap.
3) Turn RV503 so as to make the output equal to 450 ± 30mV in DC level.
4) Confirm the color reproducibility.

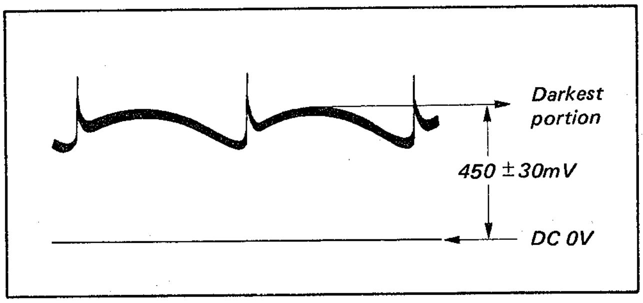


Fig. 2-31

2-4-5. Auto White Balance

Oscilloscope: CH-1: TP509 } X-Y mode
CH-2: TP508 }

Object to be shot: White pattern

Adjusting Procedure:

1) Set filter switch to ☼ (indoor).
2) Adjust with RV516 and RV517 so as to let the spot become the origin when white balance button is depressed.

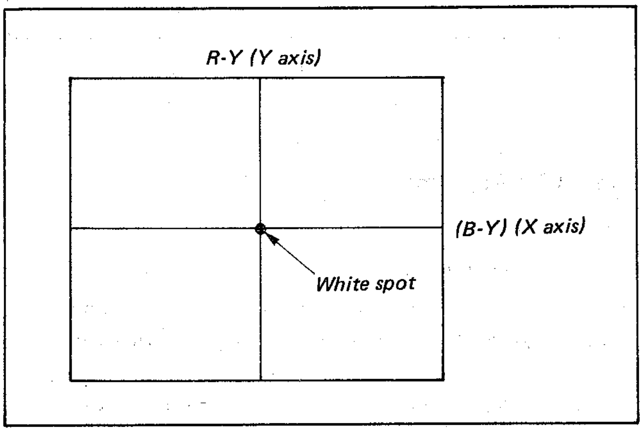


Fig. 2-32

3) Confirm that "W" in the view finder is turned off.
4) Confirm that the spot will deviate when the filter switch is switched to ✹ (outdoor).

2-4-6. Adjustment of Color Reproducibility

1. Adjustment of Chroma Level Phase

1) Oscilloscope: CH-1: TP509 } X-Y mode
   CH-2: TP508 }
   Cover with a black cap.
2) Connect the red clip of 5.4MHz oscillator jig to TP501 and the black clip to TP515.
3) Make the shape as round as possible by adjusting with RV515 and RV526.

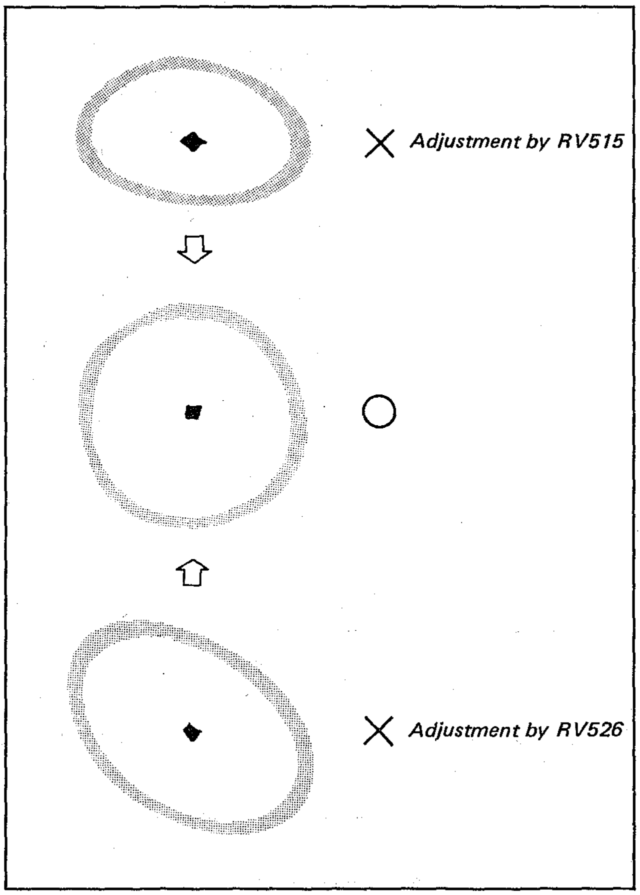


Fig. 2-33

4) Remove the black cap.
5) Oscilloscope: TP514
   Adjust RV508 to bring the larger of red levels A and B to 150 ± 10mV.

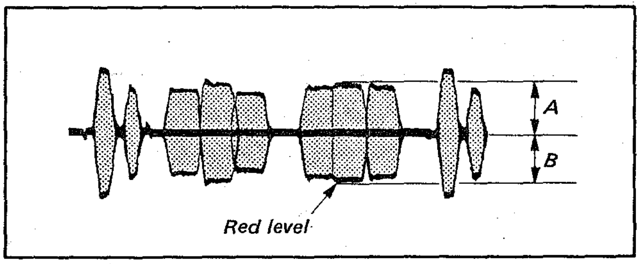


Fig. 2-34

2. Adjustment of Carrier Balance

Oscilloscope: TP514

Object to be shot: Color pattern

Adjusting Procedure:

Adjust with RV518 and RV519 so as to make the carrier component minimum.

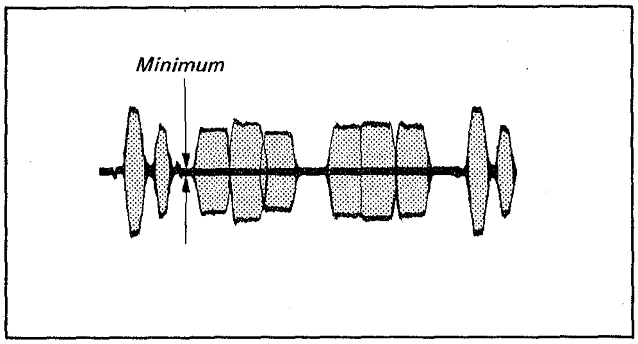


Fig. 2-35

3. HUE Adjustment

Oscilloscope: CH-1: TP509 } X-Y mode
CH-2: TP508 }

Adjusting Procedure:

Adjust with RV510 so as to have the red spots located within the standard phase frame.

4. Adjustment of White Balance

Oscilloscope : CH-1 : TP509 } X-Y mode
CH-2 : TP508 }

Object to be shot: Color pattern

Adjusting Procedure:

1) Adjust with RV513 and RV514 so as to let the white spot become the origin. (Fig. 2-36)

Note: Switch the filter switch from ☼ (indoor) to ☀ (outdoor) and to ☼ and adjust the white balance while "W" is lighted.

2) Confirm that all color spots located within the standard phase frame.
3) If the above step 2) is not satisfied, repeat above steps **3** through **4**.

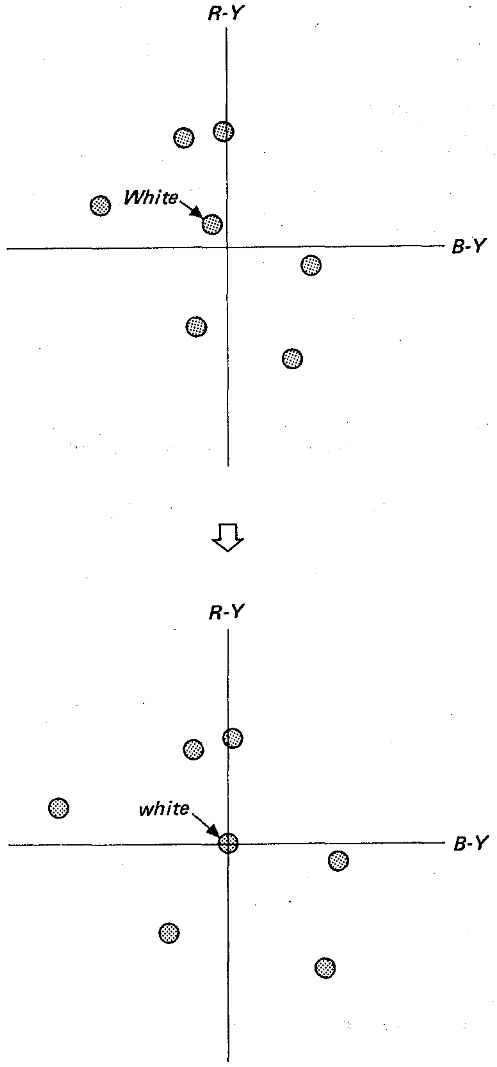
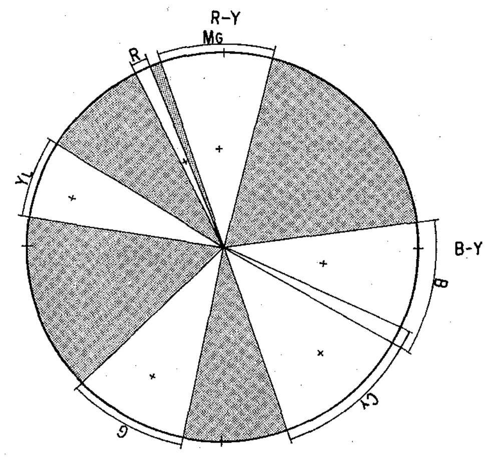

R-Y
B-Y
White
R-Y
B-Y
white

Fig. 2-36


R-Y
MG
R
YL
B-Y
B
CY
G

- *Angle at center between B and Cy must be least 10°.*

Fig. 2-37 Standard phase frame

2-4-7. PLL Adjustment (GC-3 Board)

Oscilloscope: CH-1, Point A (VC-2 Board)
External SYNC: TP511 (HD pulse)

Adjustment Procedure:

1) Short pins ① and ② of IC651 (GC-3 board) together.
2) Disconnect points A and B on VC-2 board by unsoldering. (Fig. 2-38)

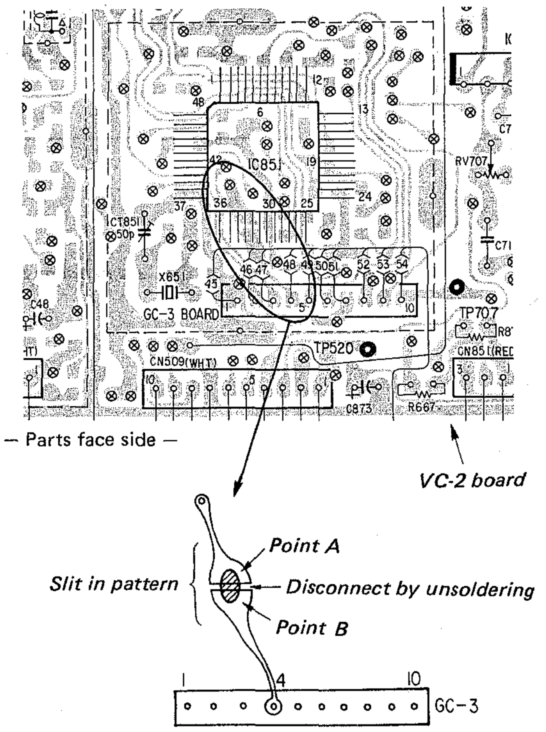
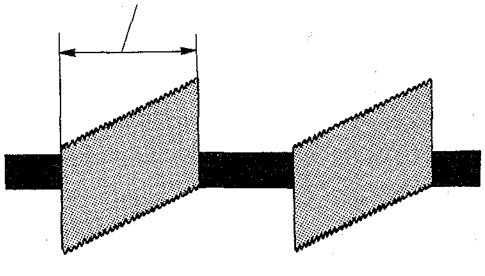

IC851
CT851
50p
X651
GC-3 BOARD
CN509(WHT)
TP520
TP707
RV707
CN851(RED
C873
R667
— Parts face side —
VC-2 board
Point A
Slit in pattern
Disconnect by unsoldering
Point B
1
4
10
GC-3

Fig. 2-38

3) Adjust CT651 to minimize fluctuation of beats. (Fig. 2-39)



Reduce fluctuation of beats as low as possible. (No fluctuation is best.)

Fig. 2-39

4) Join points A and B by soldering, and disconnect pins ① and ② of IC651.
5) Check that the voltage at point A is 1.75V with a digital voltmeter.
6) If requirement 5) is not met, repeat 1) through 5).

SECTION 3
ALIGNMENT OF MECHANICAL COMPONENTS (VIDEO SECTION)

3-1. PREPARATION FOR CHECKING, ALIGNMENT, AND REPLACEMENT OF MECHANICAL COMPONENTS

3-1-1. Removal of Cabinet

1) Remove the three screws ❶ , and remove the lens cabinet, right ❷ .
2) Remove the three screws ❸ , and remove the lens cabinet, left ❹ .
3) While opening the lens cabinet (T) ass'y ❺ in the direction of the arrow ⓐ , remove it in the direction of the arrow ⓑ.
4) Remove the ACC shoe stopper screw ❻ , and remove the ACC shoe leaf spring ❼ .
5) Remove the two screws ❽ , and remove the ACC shoe ❾ .
6) Remove the two face screws ❿ , and remove the cassette compartment lid ass'y ⓫ .
7) Remove the four screws ⓬ , and remove the cabinet, left ⓭ .
8) Remove the four screws ⓮ , and remove the cabinet, right ⓯ .

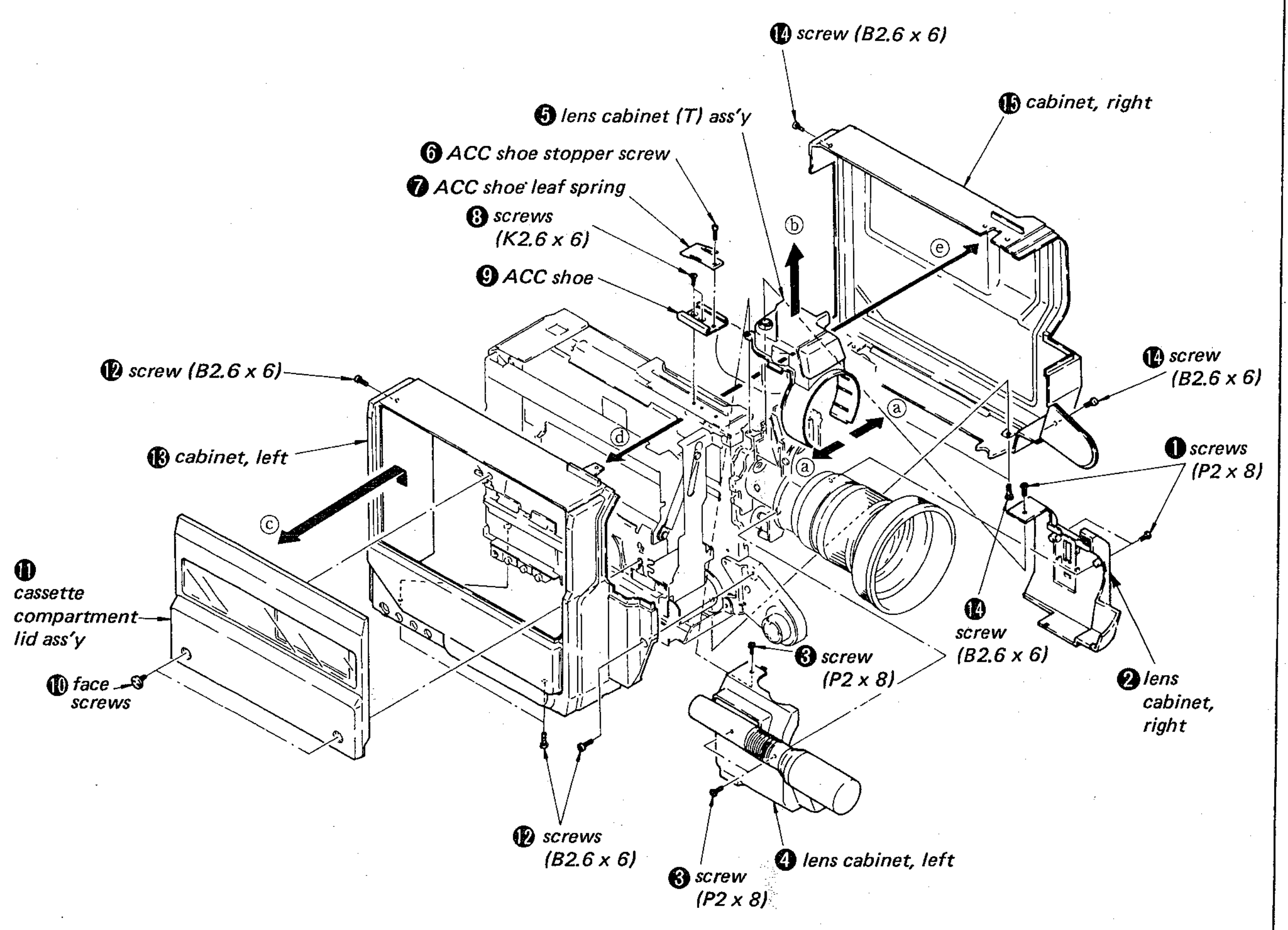
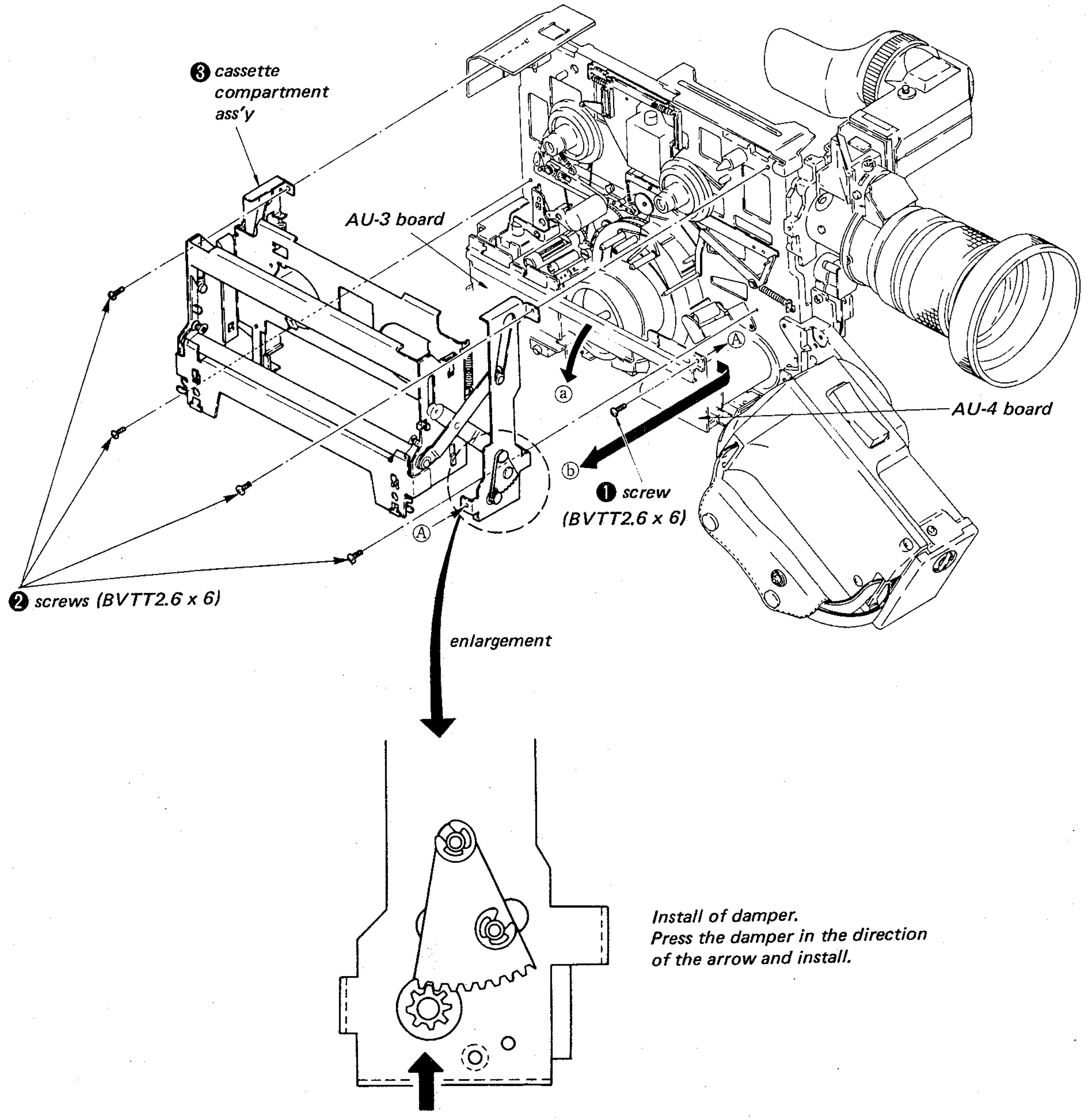

⓮ screw (B2.6 x 6)
❺ lens cabinet (T) ass'y
⓯ cabinet, right
❻ ACC shoe stopper screw
❼ ACC shoe leaf spring
❽ screws (K2.6 x 6)
❾ ACC shoe
ⓑ
ⓔ
⓬ screw (B2.6 x 6)
⓮ screw (B2.6 x 6)
⓭ cabinet, left
ⓓ
ⓐ
ⓐ
❶ screws (P2 x 8)
ⓒ
⓫ cassette compartment lid ass'y
⓮ screw (B2.6 x 6)
❸ screw (P2 x 8)
❷ lens cabinet, right
❿ face screws
⓬ screws (B2.6 x 6)
❸ screw (P2 x 8)
❹ lens cabinet, left

Fig. 3-1

3-1-2. Removal of Cassette Ass'y

1) Remove the screw ❶ .
2) Remove the four screws ❷ .
3) Turn down AU-3 and AU-4 boards in the direction of the arrow ⓐ .
4) Remove the cassette compartment ass'y ❸ .


❸ cassette compartment ass'y
AU-3 board
ⓐ
Ⓐ
Ⓐ
ⓑ
AU-4 board
❶ screw (BVTT2.6 x 6)
❷ screws (BVTT2.6 x 6)
enlargement

Install of damper.
Press the damper in the direction of the arrow and install.

Fig. 3-2

3-1-3. Method of Opening VC-2, SS-17 and PA-1 Boards

1) Remove the two screws ❶.
2) Pull out the earth pin ❷.
3) Open the VC-2 board ❸.
4) Remove the screw ❹ and remove SW-28 board ❺.
5) Remove the three screws ❻, and open SS-17 board in the direction of the arrow ⓑ.
6) Remove the solder from the three soldered sections of PA-1 board ❽, and open in the direction of the arrow ⓒ.

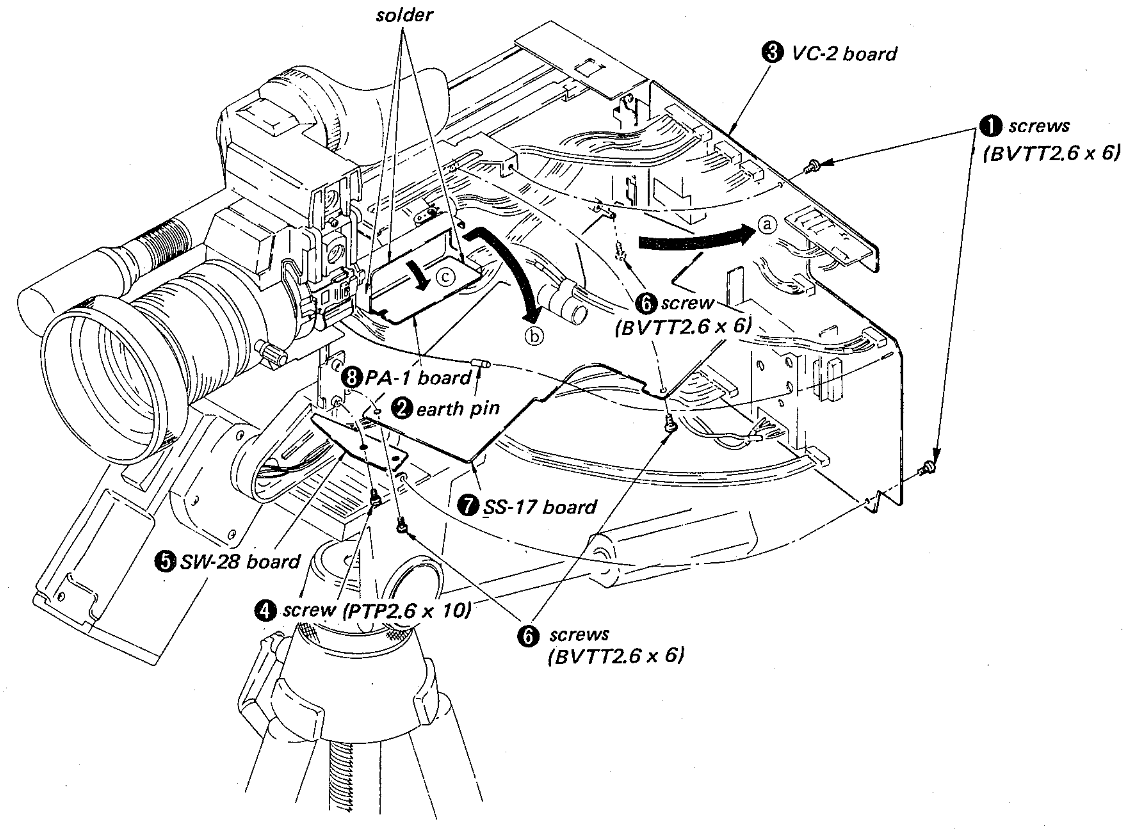

solder
❸ VC-2 board
❶ screws (BVTT2.6 x 6)
ⓐ
ⓑ
ⓒ
❻ screw (BVTT2.6 x 6)
❽ PA-1 board
❷ earth pin
❼ SS-17 board
❺ SW-28 board
❹ screw (PTP2.6 x 10)
❻ screws (BVTT2.6 x 6)

Fig. 3-3

3-2. PERIODIC CHECKS AND MAINTENANCE

The following routine inspections and maintenance procedures are recommended to assure proper functioning and performance of the set, and to extend the life of the machine and the tapes.

3-2-1. Maintenance After Servicing

After the set has been serviced, the following maintenance items must be carried out, regardless of the length of time that the set has been in use.

1. Upper Drum (Rotary Drum)

1) Clean the rotary drum using the cleaning piece (Ref. No. J6) soaked in cleaning fluid (Ref. No. J4). Press the cleaning piece lightly against the rotary drum while rotating the drum manually in the counterclockwise direction. (Never clean by rotating the drum under power, or in the clockwise direction. Clockwise rotation will cause the drum belt to come off or slip from the proper position, causing operating problems.)
2) Also, never clean the video head by moving the cleaning piece in the perpendicular direction. There is a strong possibility that such a procedure will damage the video head.

2. Cleaning the Tape Running System

1) Clean the tape guide, drum face, capstan shaft, and pinch roller using a cleaning piece soaked in cleaning fluid.

3. Cleaning the Drive System

1) Clean the drive section (belt, reel, other) using a cloth soaked in cleaning fluid.

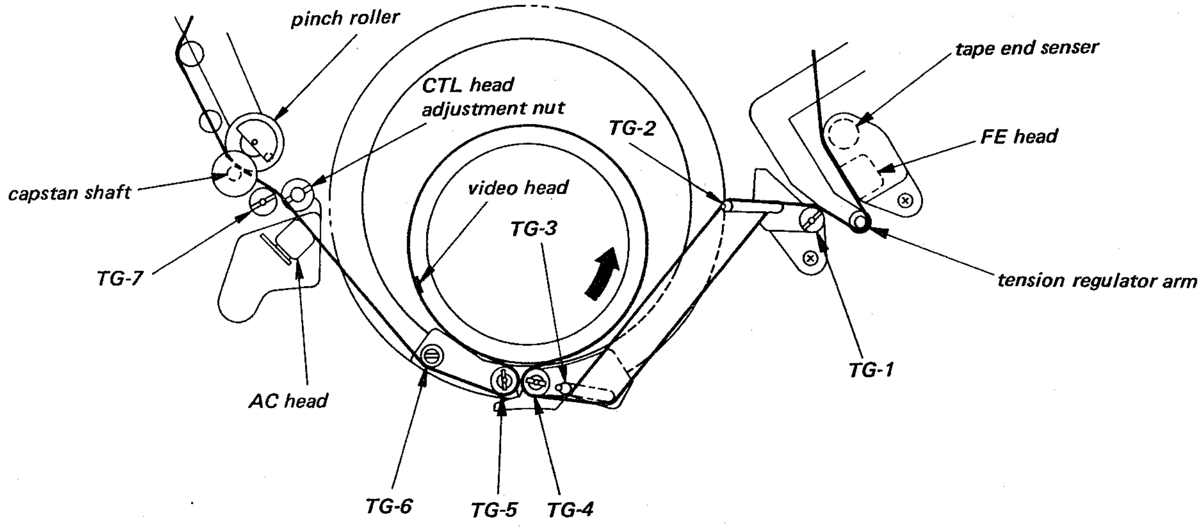

pinch roller
CTL head adjustment nut
video head
TG-2
TG-3
tape end senser
FE head
capstan shaft
TG-7
tension regulator arm
TG-1
AC head
TG-6
TG-5
TG-4

Fig. 3-4

3-2-2. Periodic Check Items

Carry out maintenance checks for the following items according to the length of time the unit has been in use.

○ : Cleaning, ◎ : Lubrication, ★ : Replacement, ☆ : Checking

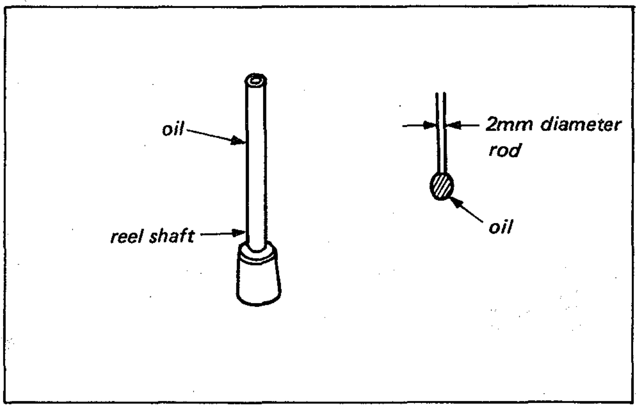
	Maintenance checks	Operating period (H) Replacement Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Running System	Cleaning of running surface of tape	————	○	○	○	○	○	○	○	○	○	○	These procedures must be carried out at each servicing. Use light pressure on the AC head as too much force can move it out of position
	Cleaning and degaussing AC head ass'y	FB7+A-6736-038-A	○	○	○	○	○	○	○	○	○	○	
	Cleaning and degaussing rotary drum	FB6+A-6762-154-A	○	○	○	○	○	○	○	○	○	○	The operating environment and method of use greatly affect the longevity of the video head.
	FE head	FB7+8-825-561-10	○	○	○	○	○	○	○	★	○	○	
Drive System	FWD belt	FB8+3-681-447-00	○	○	○	○	○	○	○	★	○	○	• These belts must be checked at each servicing. • Parts should be replaced at the operating intervals indicated, or every two years. • The tape speed should always be checked when replacing the capstan belt and the relay belt.
	Loading belt	FB6+3-681-424-00											
	Drum belt	FB6+3-681-446-00	○	○	★	○	○	★	○	○	★	○	
	Capstan belt	FB6+3-681-444-00											
	Relay belt	FB6+3-681-445-00											
	Cleaning iron core and opening of brake solenoid	FB8+1-454-357-11	–	–	–	○	–	–	–	○	–	–	
	Cleaning iron core and opening of pinch solenoid	FB7+1-454-357-21											
	Take-up reel	FB8-X-3681-404-0	–	☆	–	★	–	☆	–	★	–	☆	
	Capstan bearing	FB6+A-6735-050-A	–	◎	–	◎	–	◎	–	◎	–	◎	
	Drum motor	FB6+8-835-099-01	–	○	–	★	–	○	–	★	–	○	
Performance Checks	Abnormal sound	————	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Measurement of back tension	————	–	☆	–	☆	–	☆	–	☆	–	☆	Standard is 35 to 40g (measured with SL-0011).
	Brake system	————	–	☆	–	☆	–	☆	–	☆	–	☆	Check edit function adjustment.
	Measurement of FWD torque	————	–	☆	–	☆	–	☆	–	☆	–	☆	Check using SL-0003C. Standard is 40 $^{+10}_{-14}$ g·cm
	Tape speed	FB6+3-682-740-□□	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Check tape speed adjustment. Replace midway pulley (P) as required.

Note 1: OVERHAUL

When overhauling the unit, replace the parts refering to the outline above. The loading motor is not included in the above and should be overhauled about every 20,000 operations.

Note 2: SANYO Oil

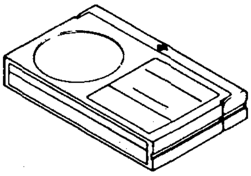
- * SANYO oil should always be used. (If oil of a different viscosity is used the correct functioning of the unit cannot be assured.)
  SANYO oil. Part No. 7-661-018-01
- * Always use clean SANYO oil to for lubricate the bearings. (Dirty oil can cause the bearings to overheat and be subjected to excessive wear.)
- * The amount of oil to be applied is shown in the following diagram. One drop should be used at the tip of a 2mm diameter rod.



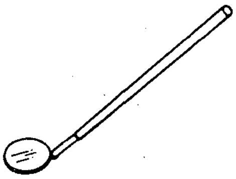
3-2-3. Summary of Servicing Tools

Ref. No.	Name	Cord No.	Fixture No.	Use, etc.
J1	Forward back tension measurement tape	J 6080 003 C	SL-0003C	FWD torque measurement
J2	Small adjustment mirror	J 6080 029 A J 6080 030 1	SL-5052	Tape pass adjustment and tape running system check
J3	Alignment tape	8 969 995 13	KR5-3C	Tracking and tape path adjustment
		8 969 995 52	KR5-2H	
J4	Cleaning fluid	Y 2031 001 0		
J5	Thickness gauge	9 911 053 00		Opening adjustment
J6	Cleaning piece	2 034 697 00		Cleaning all sections
J7	Head demagnetizer			Video, audio head degaussing
J8	Lapping tape	8 888 004 00		Video head cleaning
J9	Sector type gauge (for 50g)	7 732 050 20		FWD back tension measurement
J10	Reel table tension gauge	J 6080 011 A	SL-0011	FWD back tension measurement
J11	Driver, tape path	J 6080 811 A		Tape guide adjustment

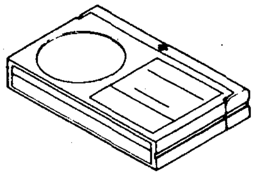
J1



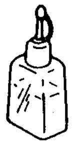
J2



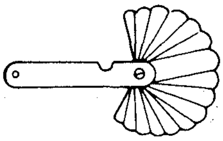
J3



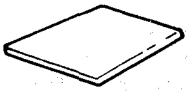
J4



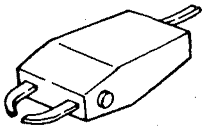
J5



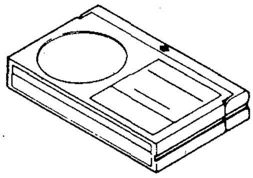
J6



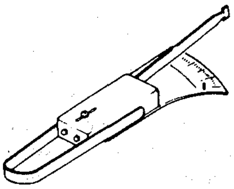
J7



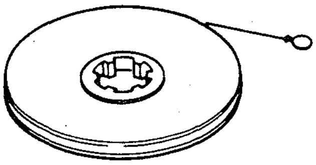
J8



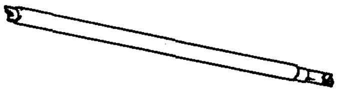
J9



J10



J11



3-3. REMOVAL AND ADJUSTMENT OF MECHANICAL PARTS

Handling Machinery with Cassette Compartment Ass'y Removed

[Threading Method]

1) Press the arm lock ❶ in the direction of arrowⒶ, and turn the microswitch ❷ ON.
2) Move the lock arm ❸ in the direction of the arrow Ⓑ .
3) Press the lock detection assebmly ❹ .
4) Move the push plate ❺ in the direction of the arrow Ⓒ , turn the microswitch ❻ ON, and start the threading ❺ operation.

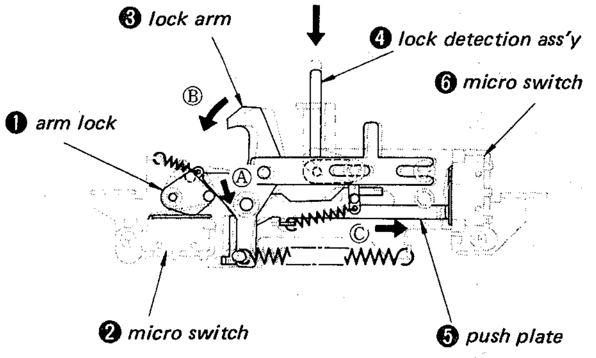

❸ lock arm
❹ lock detection ass'y
❻ micro switch
Ⓑ
❶ arm lock
Ⓐ
Ⓒ
❷ micro switch
❺ push plate

Fig. 3-5 (a)

[Recording Method]

1) Complete the threading operation.
2) While pressing the lock detection ass'y ❶ , press the REC START/STOP button on the grip block.

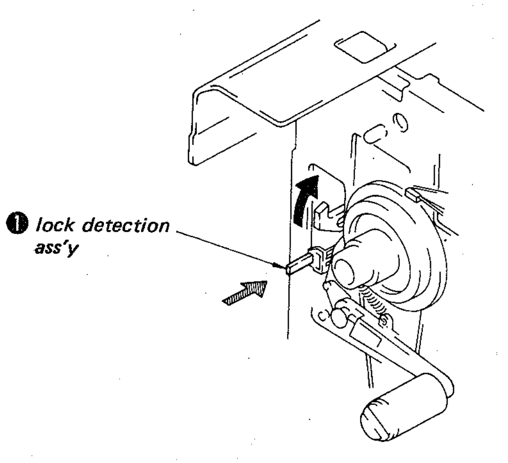

❶ lock detection ass'y

Fig. 3-5 (b)

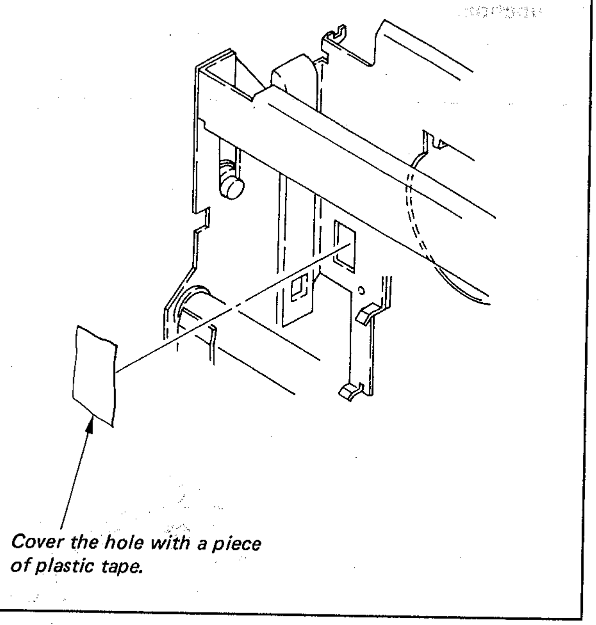

Cover the hole with a piece of plastic tape.

Fig. 3-6

3-3-1. Removal of Mechanical Parts

1. Removal of Cassette Compartment Lock Ass'y

1) Pull out the connector ❶ .
2) Remove the two screws ❷ .
3) Remove the cassette compartment lock ass'y.

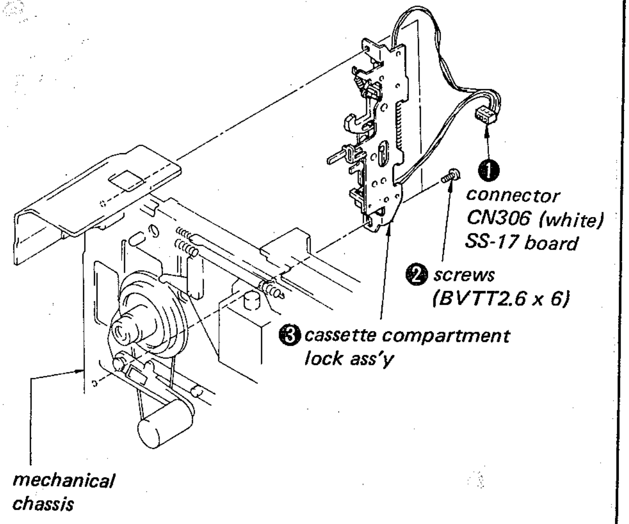

❶ connector CN306 (white) SS-17 board
❷ screws (BVTT2.6 x 6)
❸ cassette compartment lock ass'y
mechanical chassis

Fig. 3-7

2. Removal of Brake Solenoid Ass'y

- **When removing or replacing this unit, adjust the "brake solenoid location" and the "edit" function.**

1) Pull out the connector ❶.
2) Remove the two screws ❷.
3) Remove the brake solenoid ❸.
4) Remove the two screws ❹ and the BS cover ❺.
5) Pull out the spring pin ❻, and remove the brake solenoid ❼.

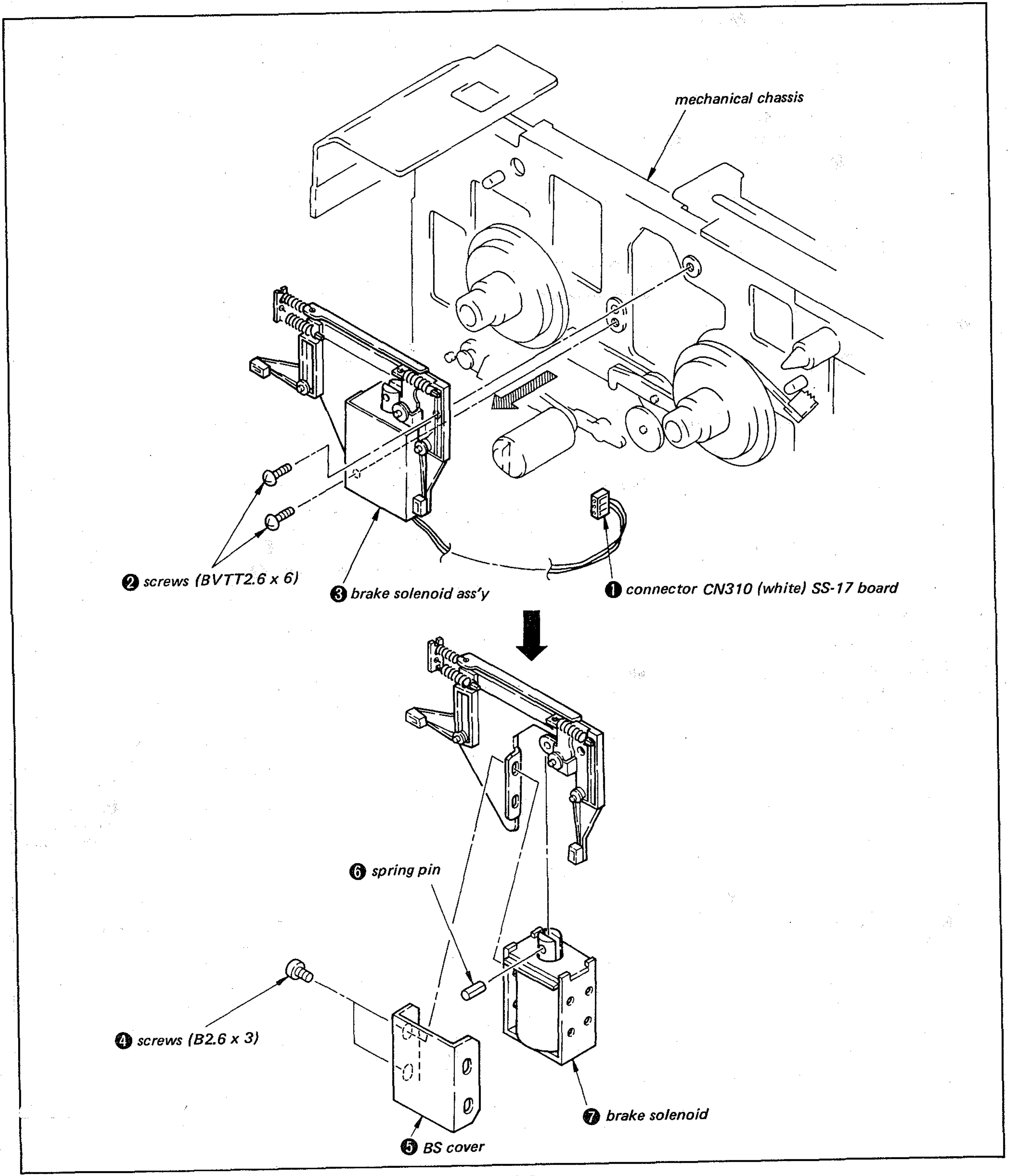

mechanical chassis
❷ screws (BVTT2.6 x 6)
❸ brake solenoid ass'y
❶ connector CN310 (white) SS-17 board
❻ spring pin
❹ screws (B2.6 x 3)
❼ brake solenoid
❺ BS cover

Fig. 3-8

3. Removal of the S Reel

1) Remove the stopper washer (2.3) ❶ .
2) Remove the S reel ❷.

Note: Take care not to lose the thrust bearing.

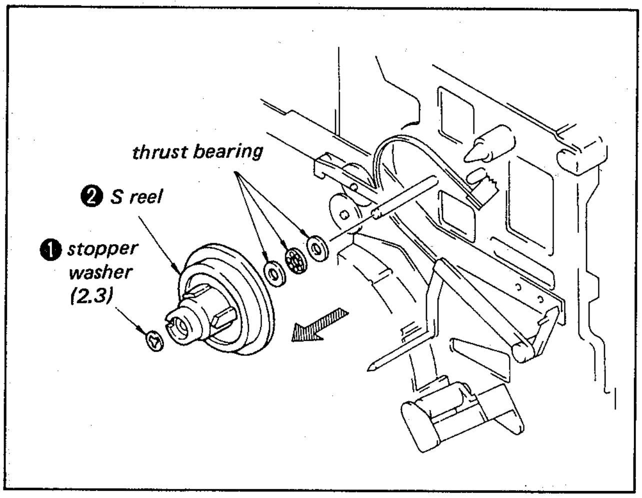

thrust bearing
❷ S reel
❶ stopper washer (2.3)

Fig. 3-9

4. Removal of the T Reel

1) Remove the stopper washer (2.3) ❶ .
2) Remove the FWD belt ❷ .
3) Remove the T reel ❸ .

Note: Take care not to lose the washers (1 or 2, depending on the set).

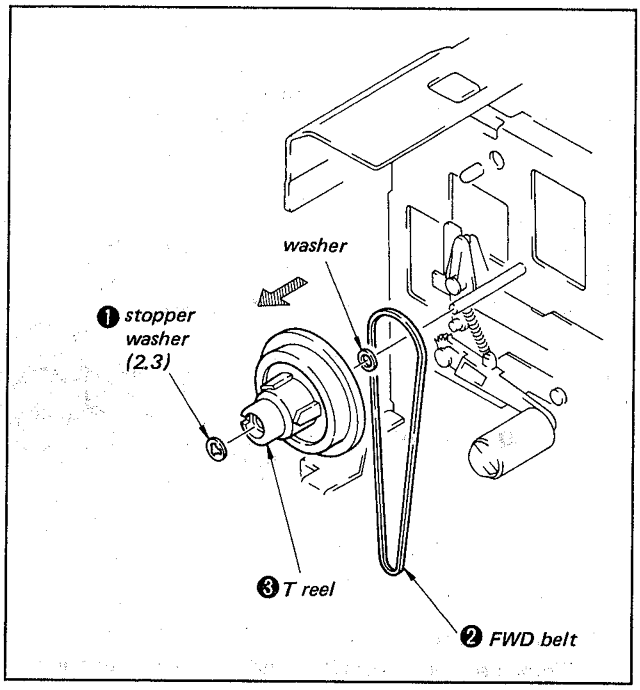

washer
❶ stopper washer (2.3)
❸ T reel
❷ FWD belt

Fig. 3-10

5. Removal of Pinch Roller Ass'y

- **When removing or replacing this unit, perform the "pinch roller location adjustment".**

1) Remove the stopper washer (2.3) ❶ .
2) Remove the tension spring ❷ .
3) Remove the pinch roller ass'y ❸ .

Note: Take care not to lose the washer.

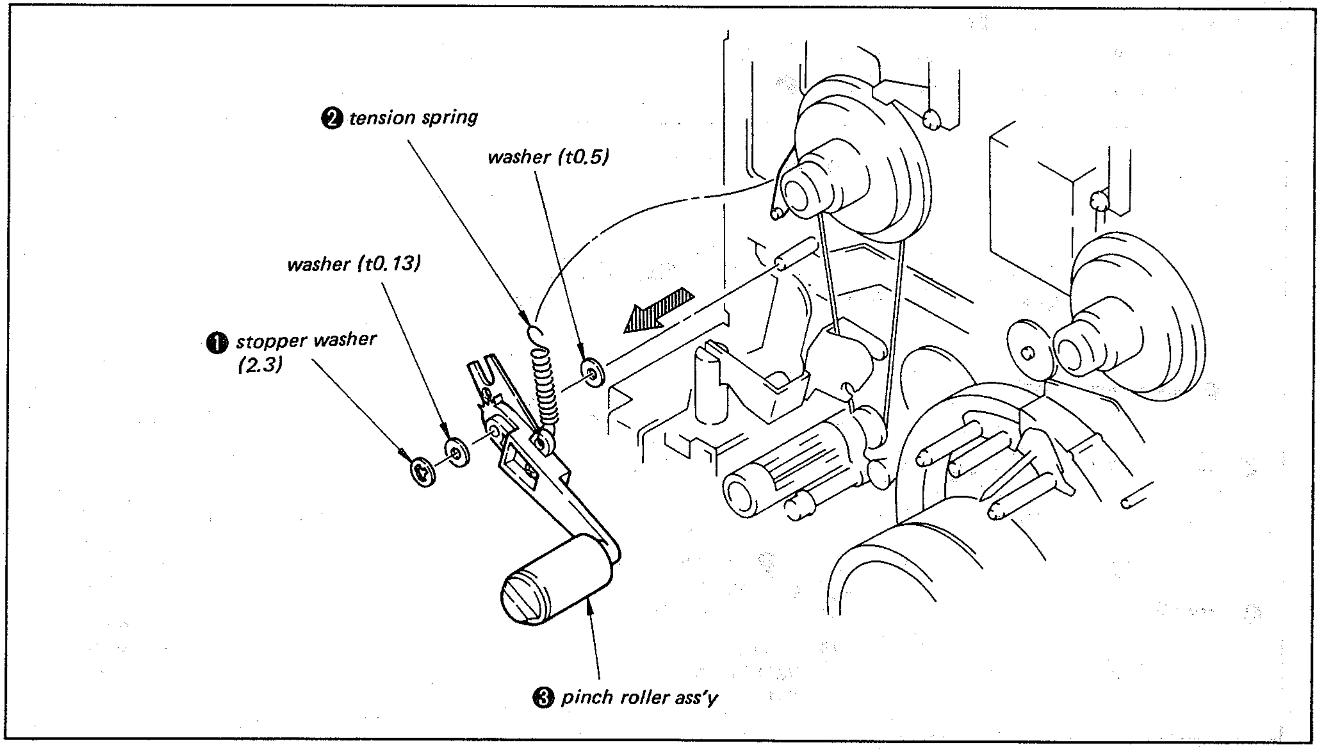

❷ tension spring
washer (t0.5)
washer (t0.13)
❶ stopper washer (2.3)
❸ pinch roller ass'y

Fig. 3-11

6. Removal of Loading Motor Ass'y

1) Remove the screw ❶.
2) Remove the connector ❷ or the solder (Ⓐ section).
3) Remove the loading motor ass'y ❸.

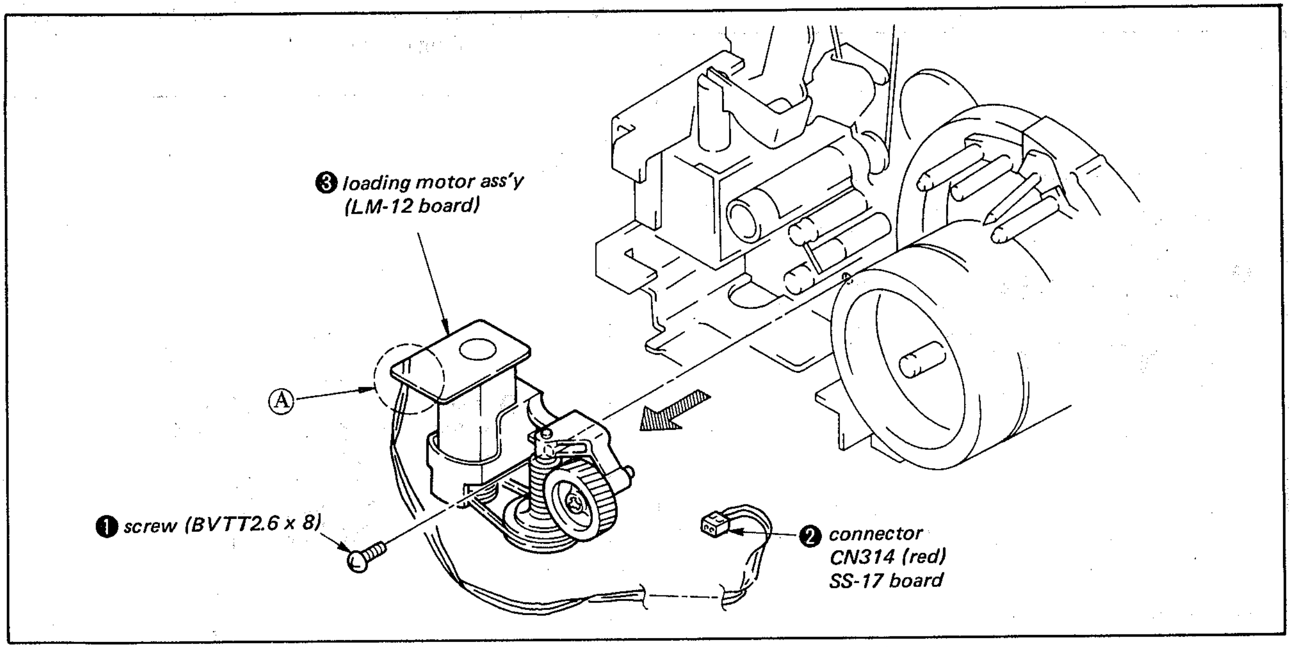

❸ loading motor ass'y (LM-12 board)
Ⓐ
❶ screw (BVTT2.6 x 8)
❷ connector CN314 (red) SS-17 board

Fig. 3-12

7. Removal of Pinch Solenoid Ass'y

- **When removing or replacing this unit, adjust the "pinch solenoid location" and the "edit" function.**

1) Remove the tension spring ❶.
2) Pull out the connector ❷.
3) Remove the two stopper washers (2.3) ❸.
4) Remove the two screws ❹.
5) Press the FWD belt in the direction of the arrow Ⓐ, and remove the pinch solenoid ass'y ❺.

[Precautions to be taken on installation]

As shown in Fig. 3-13, twist in the direction of the arrow and secure.
If not twisted, the plunger will not operate smoothly.

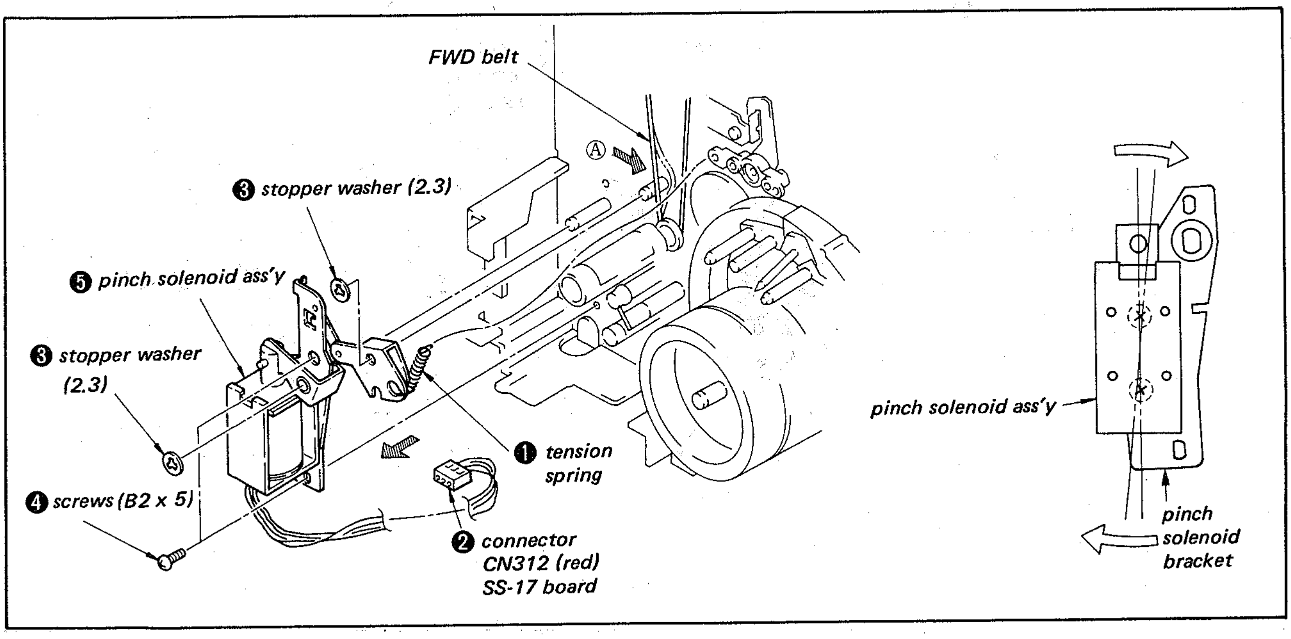

FWD belt
Ⓐ
❸ stopper washer (2.3)
❺ pinch solenoid ass'y
❸ stopper washer (2.3)
❹ screws (B2 x 5)
❶ tension spring
❷ connector CN312 (red) SS-17 board
pinch solenoid ass'y
pinch solenoid bracket

Fig. 3-13

8. Removal of Drum Motor Ass'y

1) Remove the drum belt ❶.
2) Remove the two screws ❷.
3) Remove the connector ❸ or the solder (Ⓐ section).
4) Remove the drum motor ass'y.

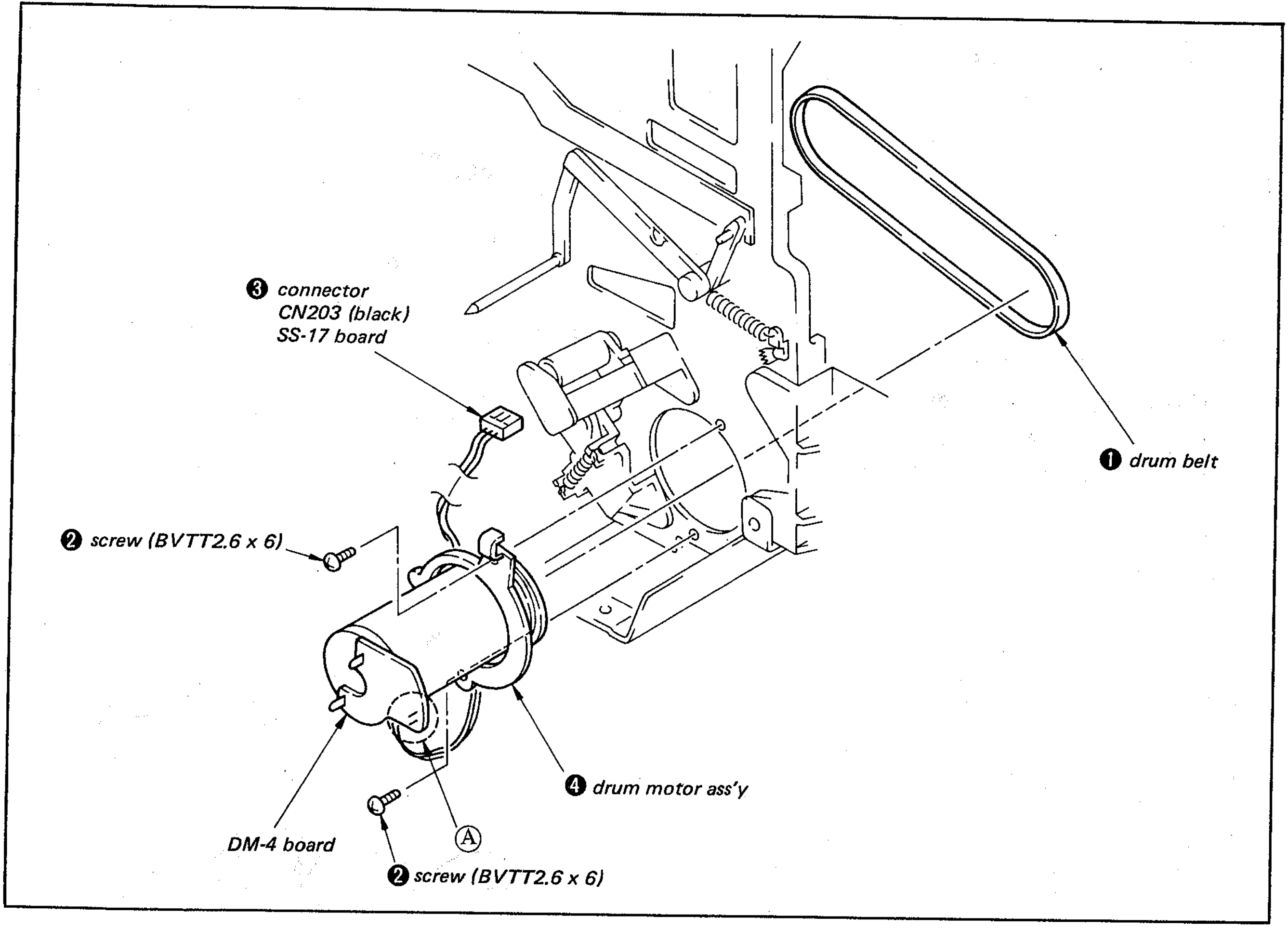

❸ connector
CN203 (black)
SS-17 board
❶ drum belt
❷ screw (BVTT2.6 x 6)
❹ drum motor ass'y
DM-4 board
Ⓐ
❷ screw (BVTT2.6 x 6)

Fig. 3-14

9. Removal of FE Head Ass'y

1) Remove the two connectors ❶ or the solder (Ⓐ and Ⓑ sections).
2) Remove the screw ❷.
3) Remove the FE head ass'y ❸.

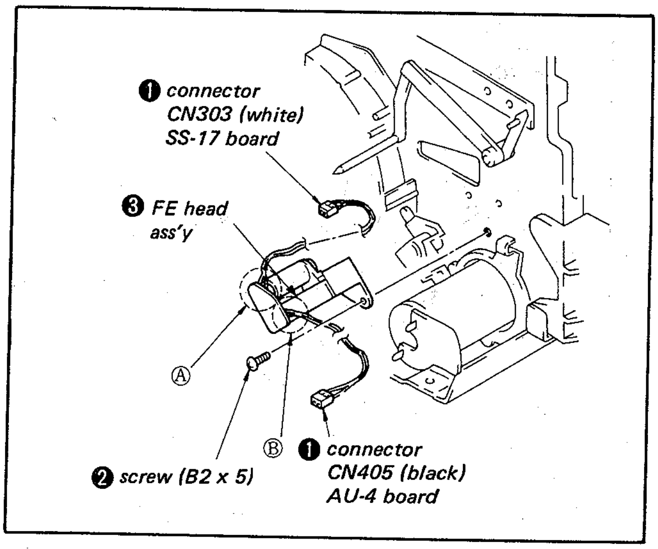

❶ connector
CN303 (white)
SS-17 board
❸ FE head
ass'y
Ⓐ
Ⓑ
❶ connector
CN405 (black)
AU-4 board
❷ screw (B2 x 5)

Fig. 3-15

10. Removal of AC Head Ass'y

- **When removing or replacing this unit, perform the "audio height adjustment" and the "audio azimuth adjustment".**

1) Remove the guide adjustment nut ❶.

Note: Take care not to lose the 3ϕ washer.

2) Remove the solder on the lead line.
3) Remove the AC head ❷.

Note: Take care not to lose the adjustment spring.

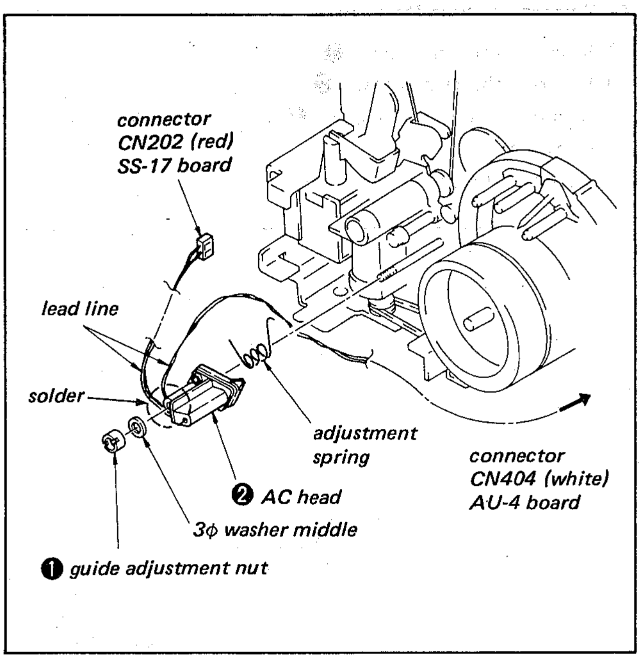

connector
CN202 (red)
SS-17 board
lead line
solder
adjustment spring
connector
CN404 (white)
AU-4 board
❷ AC head
3ϕ washer middle
❶ guide adjustment nut

Fig. 3-16

11. Removal of Capstan Flywheel Ass'y

1) Remove the capstan belt ❶.
2) Remove the screw ❷.
3) Remove the thrust retainer plate ❸.
4) Remove the flywheel ❹.

Note: Take care not to lose the two oil seal rings (c).

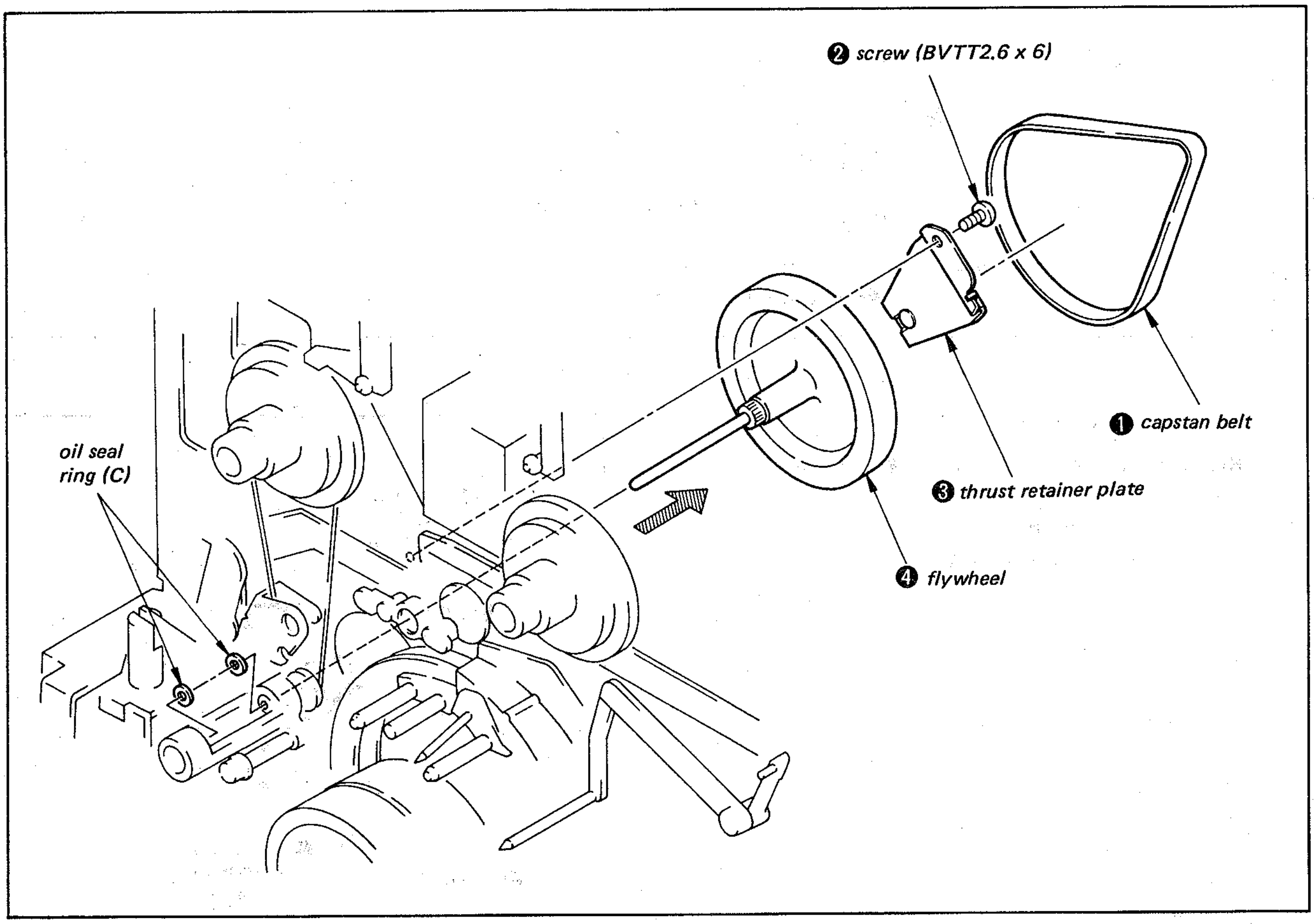

❷ screw (BVTT2.6 x 6)
oil seal
ring (C)
❶ capstan belt
❸ thrust retainer plate
❹ flywheel

Fig. 3-17

12. Removal of Capstan Bearing Block Ass'y

- **When removing or replacing this unit, check the "tape path".**

1) Remove the three screws ➊.
2) Remove the capstan bearing block ass'y.

[Precautions to be taken on installation]

Press in the clockwise direction, then tighten the screws.

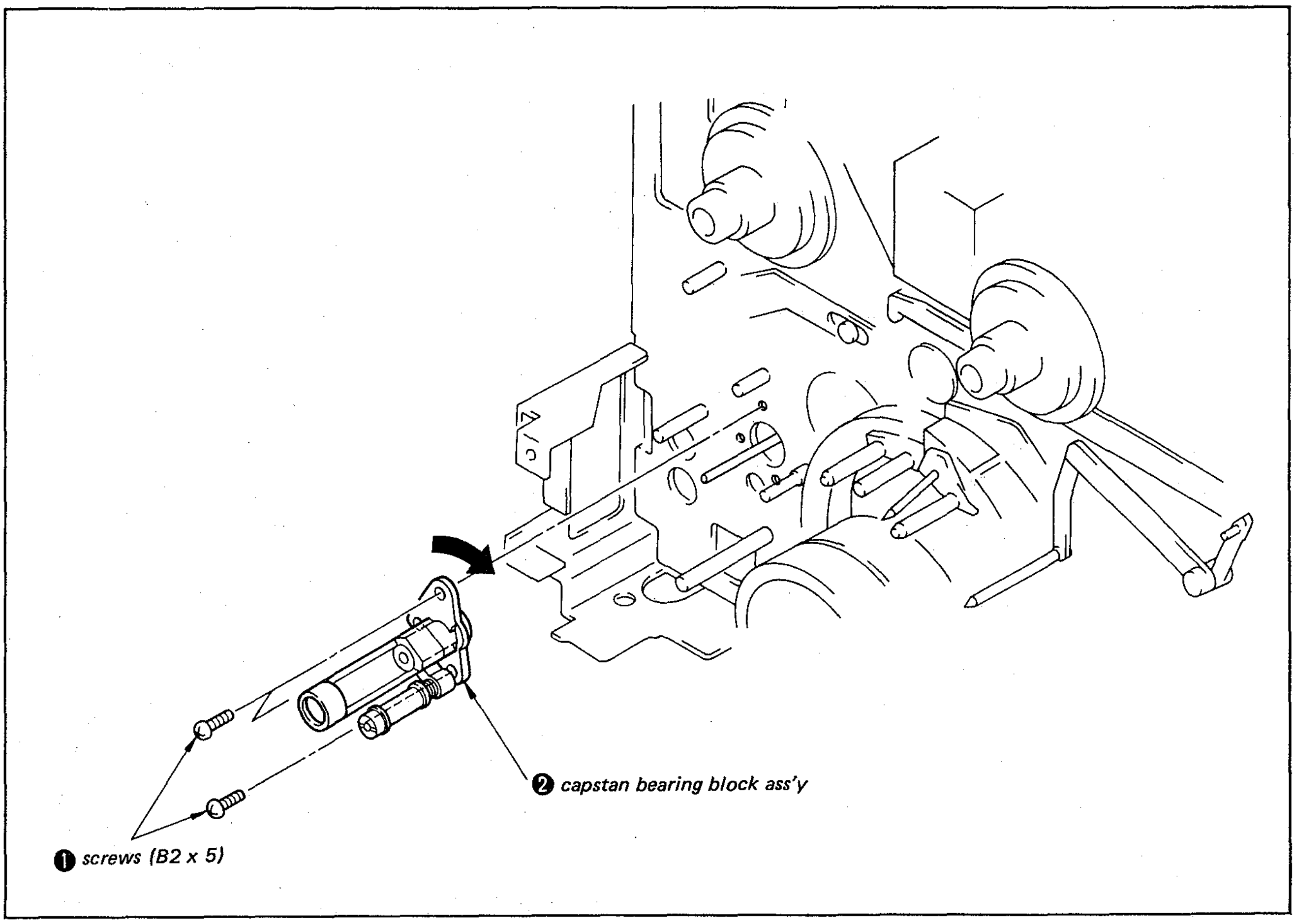

➋ capstan bearing block ass'y
➊ screws (B2 x 5)

Fig. 3-18

13. Removal of TG-1 Base Block Ass'y

- **When removing or replacing this unit, check the "tape path".**

1) Remove the screw ➊.
2) Remove the TG-1 base block ass'y.

[Precaution to be taken on installation]

After installation, run an actual tape, equalize the vertical tape tension between No. 2 guide and No. 3 guide, and align the TG-1 base block ass'y ➋ position by turning in the direction of the arrow.

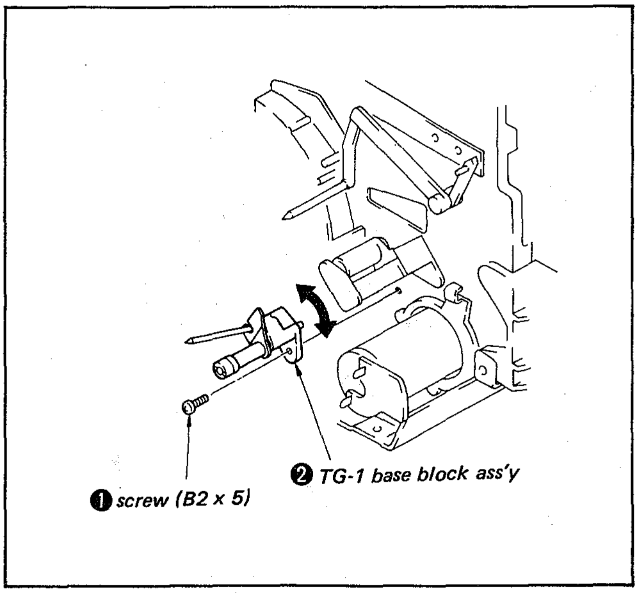

➋ TG-1 base block ass'y
➊ screw (B2 x 5)

Fig. 3-19

14. Removal of Tension Regulator Band Ass'y

- **When removing or replacing this unit, perform the "tension regulator lever position adjustment" and the "FWD back tension adjustment".**

1) Remove the screw ❶.
2) Remove the tension spring ❷.
3) Remove the stopper washer (2.3) ❸.
4) Remove the tension regulator arm ❹.
5) Remove the tension regulator arm from the tension regulator band ❺.

Note: Take care not to lose the washer.

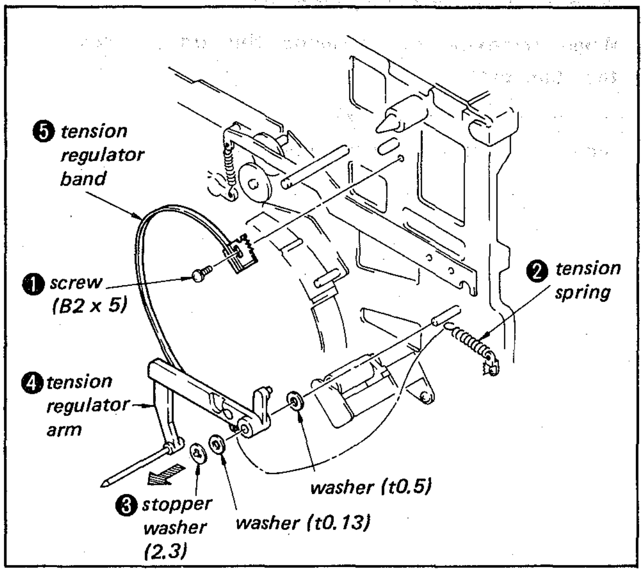

❺ tension regulator band
❶ screw (B2 x 5)
❷ tension spring
❹ tension regulator arm
washer (t0.5)
❸ stopper washer (2.3)
washer (t0.13)

Fig. 3-20

15. Removal of Drum Ass'y

- **When removing or replacing this unit, check the "tape path".**

1) Remove the drum belt ❶.
2) Pull out the two connectors ❷.
3) Remove the two screws ❸.
4) Remove the drum ass'y ❹.

Note: Because there are cases where a drum spacer is also inserted, care should be taken not to lose it. Also, when installing and replacing the drum ass'y, this spacer should be properly installed.

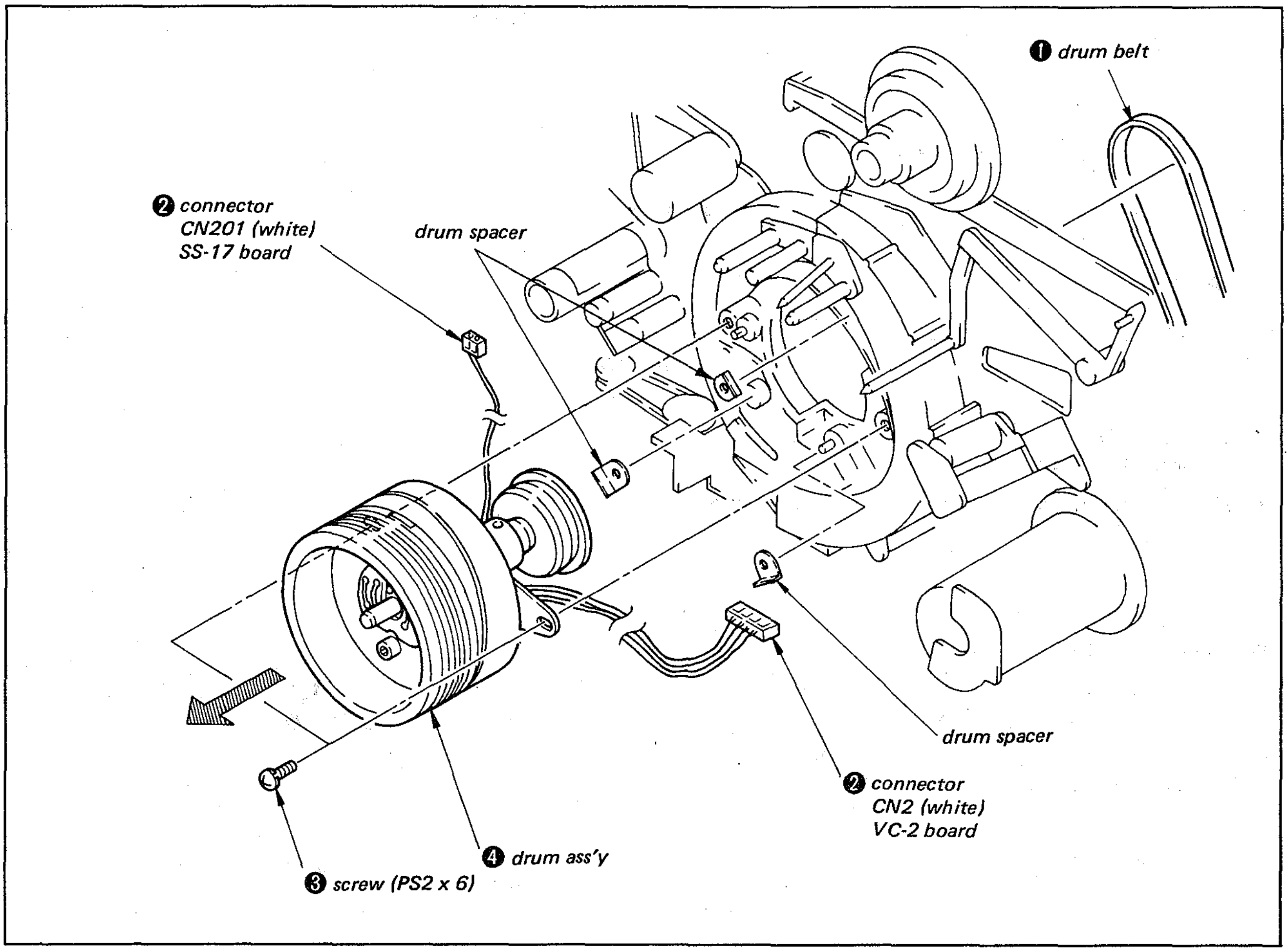

❶ drum belt
❷ connector CN201 (white) SS-17 board
drum spacer
drum spacer
❷ connector CN2 (white) VC-2 board
❹ drum ass'y
❸ screw (PS2 x 6)

Fig. 3-21

16. Removal of Upper Drum (Rotary Drum)

- **When removing or replacing this unit, check the "tape path". and perform an "angle ratio alignment".**

1) Remove the hexagon hole bolt.

Note: Take care not to lose the two washers.

2) Remove the solder from the four enamel wires.

Note: Do not remove the solder from the vinyl wire.

3) Remove the upper drum ❷.

Note: When removing the upper drum, leave the lower drum in place as far as possible, and take care not to disrupt the tape path.

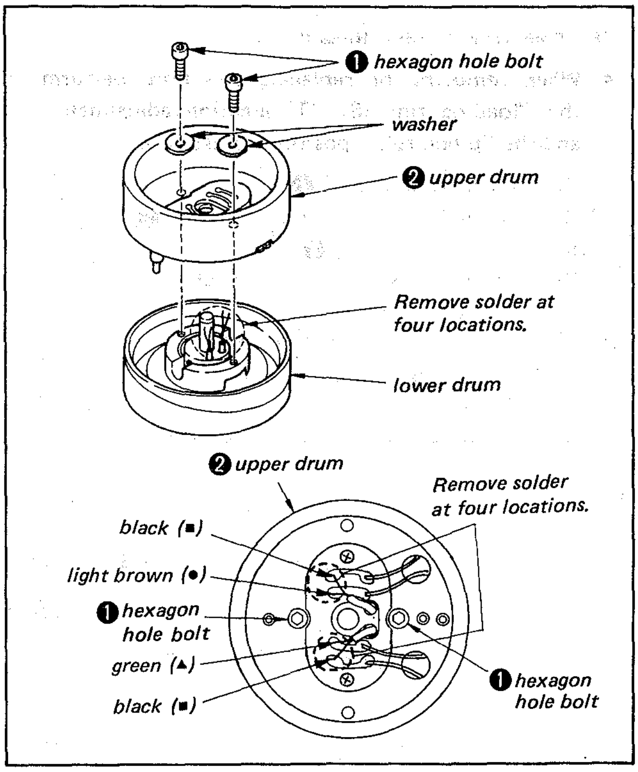

❶ hexagon hole bolt
washer
❷ upper drum
Remove solder at four locations.
lower drum
❷ upper drum
Remove solder at four locations.
black (■)
light brown (●)
❶ hexagon hole bolt
green (▲)
black (■)
❶ hexagon hole bolt

Fig. 3-22

17. Removal of Threading Guides (S-1), (S-2)

1) Remove the two screws ❶.
2) Remove the threading guide (S-2) ❷.
3) Remove the two screws ❸.
4) Remove the threading guide (S-1) ❹.

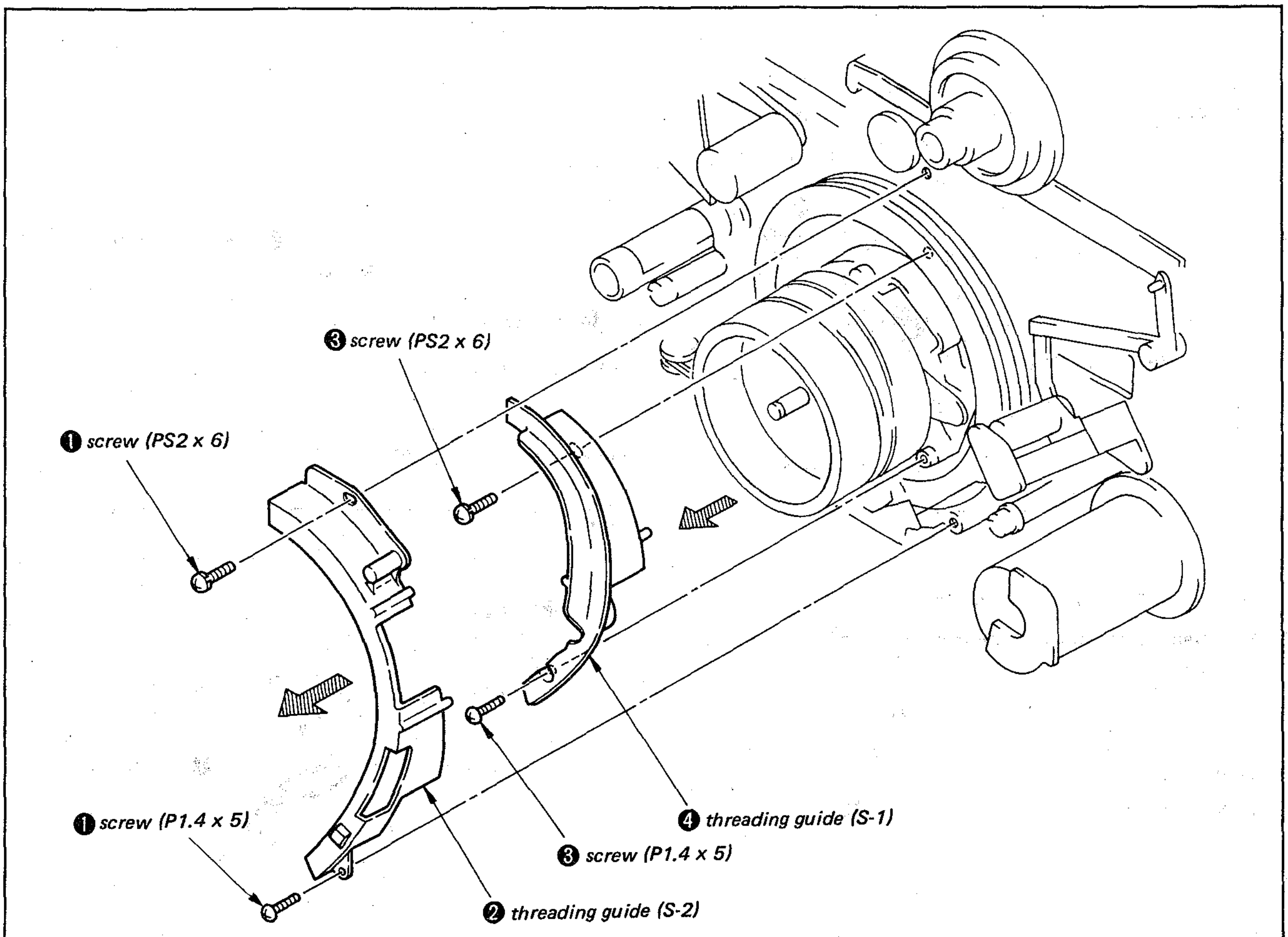

❸ screw (PS2 x 6)
❶ screw (PS2 x 6)
❶ screw (P1.4 x 5)
❹ threading guide (S-1)
❸ screw (P1.4 x 5)
❷ threading guide (S-2)

Fig. 3-23

18. Removal of Loading Rings (S), (T)

- **When removing or replacing this unit, perform the "loading ring (S), (T) location adjustment" and the "pinch roller position adjustment".**

1) Remove the four screws ❶.
2) Remove the DEW condensation sensor ❷.
3) Remove the drum base ❸.
4) Remove the two stopper washers ❹.
5) Remove the ring guide roller (A) ❺ (two places).
6) Remove the loading ring (T) ❻ in the direction of the arrow Ⓑ, while pressing it in the direction of the arrow Ⓐ.

* Remove the loading rings (S), and (T) without removing the ring guide rollers (three places).

7) Remove the ring guide roller (B) ❼.
8) Remove the ring guide roller (D) ❽.
9) Remove the loading ring (S) ❾ in the direction of the arrow Ⓑ, while pressing it in the direction of the arrow Ⓒ.
10) It is unnecessary to remove the ring guide roller (C) ❿ and the two washers, but care should be taken that they are not lost.

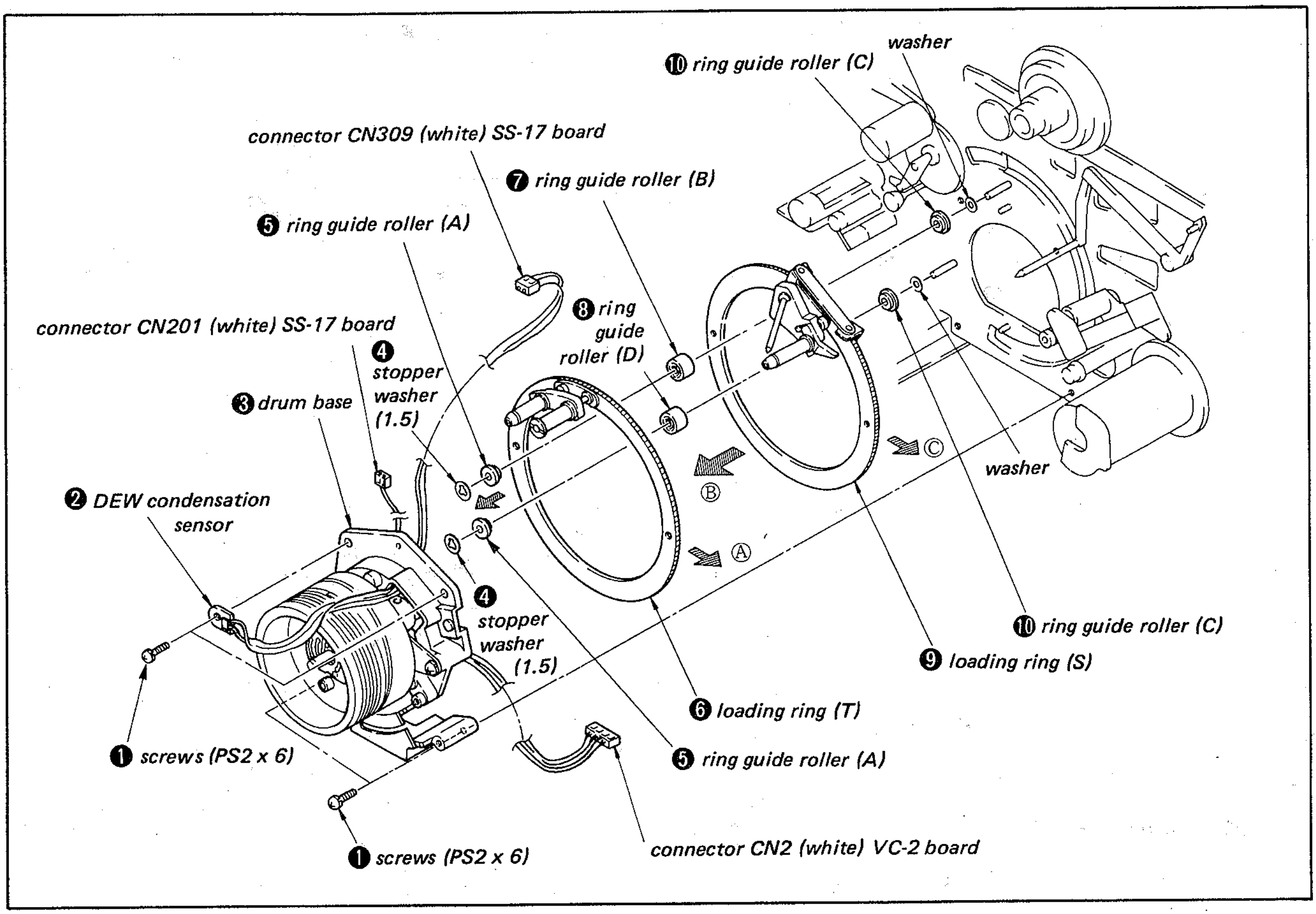

washer
❿ ring guide roller (C)
connector CN309 (white) SS-17 board
❼ ring guide roller (B)
❺ ring guide roller (A)
❽ ring guide roller (D)
connector CN201 (white) SS-17 board
❹ stopper washer (1.5)
❸ drum base
Ⓒ
washer
Ⓑ
❷ DEW condensation sensor
Ⓐ
❹ stopper washer (1.5)
❿ ring guide roller (C)
❾ loading ring (S)
❻ loading ring (T)
❶ screws (PS2 x 6)
❺ ring guide roller (A)
❶ screws (PS2 x 6)
connector CN2 (white) VC-2 board

Fig. 3-24

19. Removal of TG-4 Base Block Ass'y

- **When removing or replacing this unit, check the "tape path".**

1) Remove the poly-washer (1.2) ❶.
2) Remove the TG-4 base plate (B) ❷.
3) Remove the poly-washer (1.2) ❸.
4) Remove the TG-4 base block ass'y ❹.

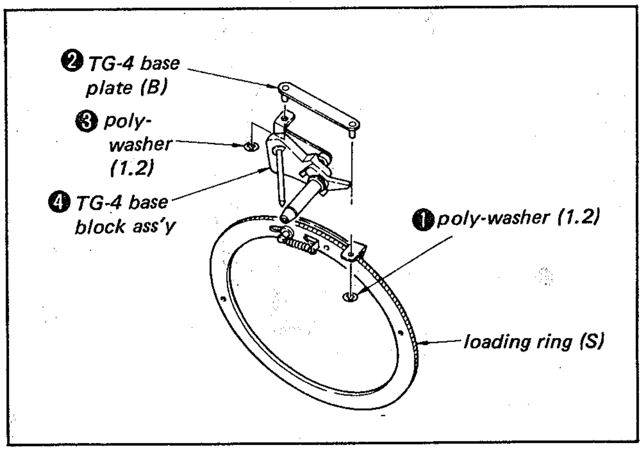

❷ TG-4 base plate (B)
❸ poly-washer (1.2)
❹ TG-4 base block ass'y
❶ poly-washer (1.2)
loading ring (S)

Fig. 3-25

20. Removal of TG-5 Base Block Ass'y

- **When removing or replacing this unit, check the "tape path".**

1) Remove the tension spring ❶ from Ⓐ section.
2) Remove the stopper washer ❷.
3) Remove the TG-5 base block ass'y ❸.

Note: Take care not to lose the TG-5 base poly-slider.

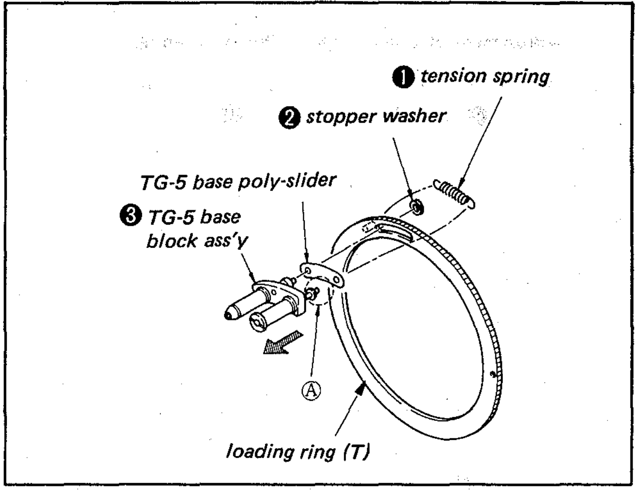

❶ tension spring
❷ stopper washer
TG-5 base poly-slider
❸ TG-5 base block ass'y
Ⓐ
loading ring (T)

Fig. 3-26

21. Removal of Midway Pulley (P) and Relay Pulley Ass'y

[Removal of Midway Pulley (P)]

- **When the relay pulley has been replaced, perform the "tape speed alignment".**

1) Remove the relay belt ❶.
2) Loosen the set-sct hexagon screw ❷ and remove the midway pulley (P).

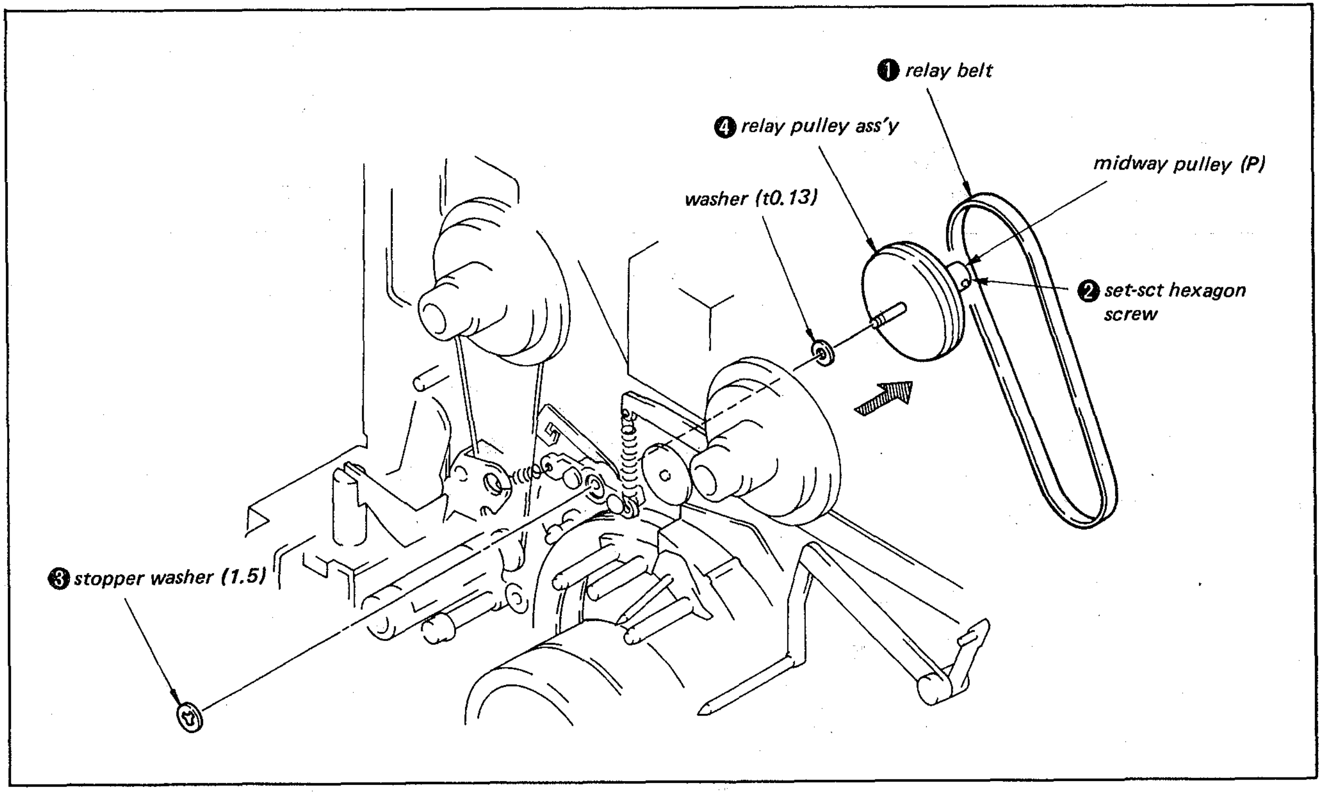

❶ relay belt
❹ relay pulley ass'y
midway pulley (P)
washer (t0.13)
❷ set-sct hexagon screw
❸ stopper washer (1.5)

Fig. 3-27

[Removal of Relay Pulley Ass'y]

- **When the midway pulley (P) has been replaced, perform the "tape speed alignment".**

1) Remove the relay belt ❶.
2) Remove the stopper washer (1.5) ❸.
3) Remove the relay pulley ass'y ❹.

3-3-2. Mechanical Alignment

1. Adjustment of Loading Motor Pulley Opening

1) Adjust the opening between the loading motor pulley ❶ and the motor case ❷ to 3mm.

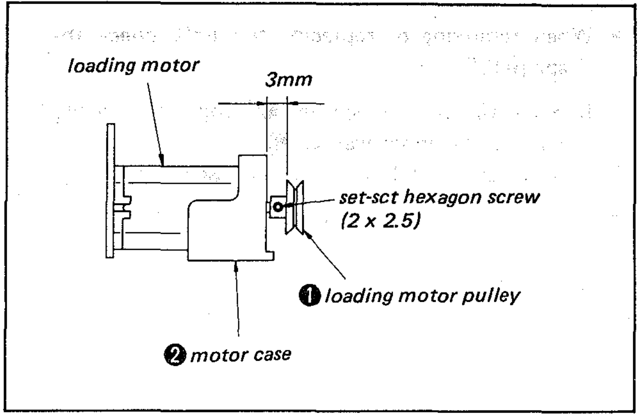

loading motor
3mm
set-sct hexagon screw (2 x 2.5)
❶ loading motor pulley
❷ motor case

Fig. 3-28

2. Adjustment of Drum Motor Pulley Opening

1) Adjust the opening between the drum motor pulley ❶ and the drum motor bracket ❷ to 3mm.

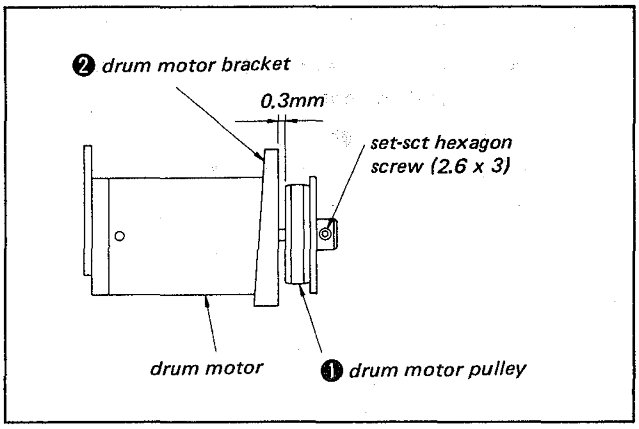

❷ drum motor bracket
0.3mm
set-sct hexagon screw (2.6 x 3)
drum motor
❶ drum motor pulley

Fig. 3-29

3. Adjustment of the Position of the Loading Ring (S), (T)

- **When making this adjustment, check the "pinch roller position adjustment".**

1) Secure the loading gear (S) ❶ with the stopper washer (1.5) ❷.
2) Put the loading rings (S) ❸ and (T) ❹ in threading status.
3) Line up the loading rings (S) and (T) with the positioning holes in the mechanical chassis.
4) Engage the loading gear (T) ❺, and secure it with the stopper washer (1.5) ❻.

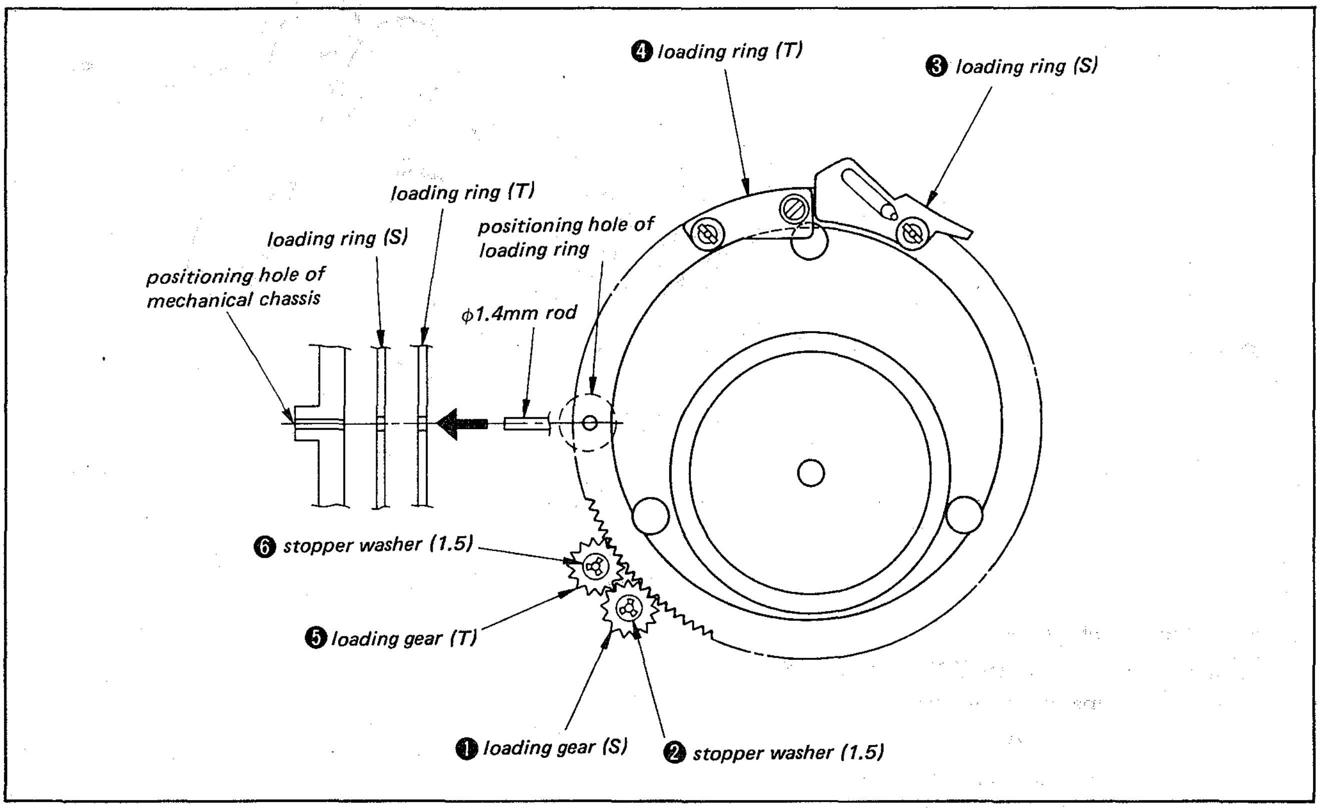

❹ loading ring (T)
❸ loading ring (S)
loading ring (T)
loading ring (S)
positioning hole of loading ring
positioning hole of mechanical chassis
ϕ1.4mm rod
❻ stopper washer (1.5)
❺ loading gear (T)
❶ loading gear (S)
❷ stopper washer (1.5)

Fig. 3-30

4. Adjustment of the Position of the Driving Gears (A), (B)

1) Put in threading status and line up the loading ring positioning holes.
2) Press the PT function lever ❶ in the direction of the arrow and line up the mechanical chassis and PT function lever ❶ positioning holes, then secure the PT function lever by inserting the 1.4mm diam rod.
3) Engage the driving gears (A) ❷ and (B) ❸ as indicated in the drawing.

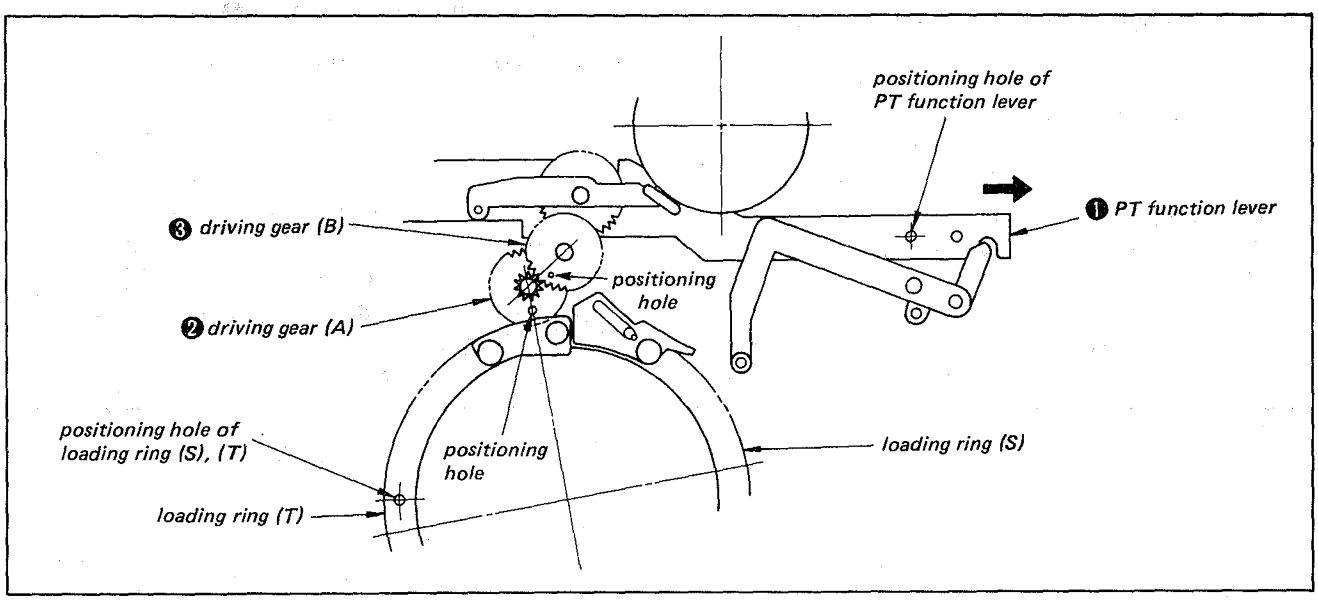

positioning hole of PT function lever
❶ PT function lever
❸ driving gear (B)
positioning hole
❷ driving gear (A)
positioning hole of loading ring (S), (T)
positioning hole
loading ring (S)
loading ring (T)

Fig. 3-31

5. Adjustment of the Position of the Pinch Solenoid

1) Loosen the two screws ❶.
2) Press the plunger ❸ of the pinch solenoid ❷ in the direction of arrow Ⓐ.
3) At that time, move the PS bracket ❻ in the direction of arrow Ⓑ, so that the opening between the pinch press lever ❹ and the pinch press lever (D) ❺ becomes 0.5mm.
4) Tighten the two screws ❶.
5) Turn on the power, press the REC START/STOP button, and turn the pinch solenoid ON/OFF, and confirm that the opening is 0.5mm.

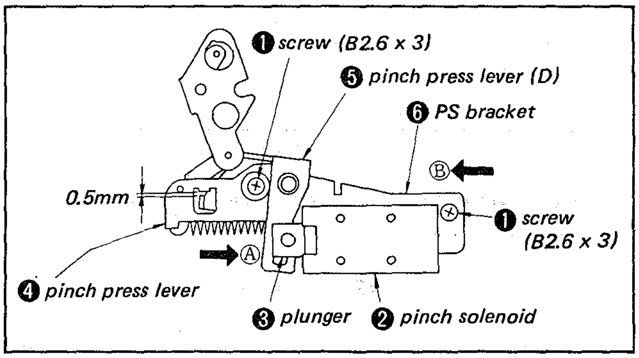

❶ screw (B2.6 x 3)
❺ pinch press lever (D)
❻ PS bracket
Ⓑ
0.5mm
❶ screw (B2.6 x 3)
Ⓐ
❹ pinch press lever
❸ plunger
❷ pinch solenoid

Fig. 3-32

6. Adjustment of the Position of the Brake Solenoid

1) Press the plunger of the brake solenoid in the direction of the arrow Ⓐ. First set the brake rubber to touch the S reel and T reel, then press the plunger further. Next adjust the brake solenoid position in the Ⓑ direction and set with the screws ❺.
2) With the plunger ❷ pulled in the direction of the arrow Ⓒ, adjust the opening between the brake rubber ❹ and the S reel and T reel to 0.5 to 1.0mm.

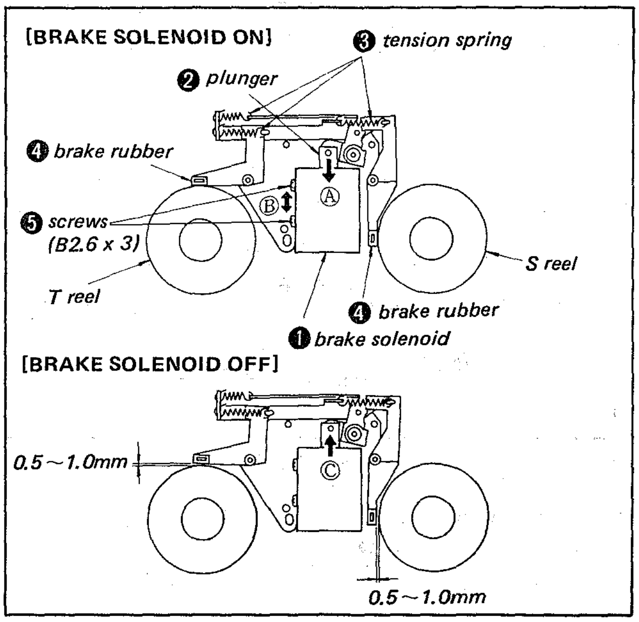

[BRAKE SOLENOID ON]
❸ tension spring
❷ plunger
❹ brake rubber
Ⓑ
Ⓐ
❺ screws (B2.6 x 3)
S reel
T reel
❹ brake rubber
❶ brake solenoid
[BRAKE SOLENOID OFF]
0.5～1.0mm
Ⓒ
0.5～1.0mm

Fig. 3-33

7. Adjustment of the Position of the Pinch Roller

1) Turn on the power, and after completing the threading operation, press the REC START/STOP button two or three times to turn the pinch solenoid ON and OFF.

Note: If threading is done manually, the final threaded position will be inaccurate. Therefore, threading should always be carried out with the power applied, after which the pinch solenoid should be turned ON and OFF.

2) Loosen the screw ❶ , and adjust the opening between the pinch roller ❷ and the capstan shaft ❸ to 0.5mm.
3) Depress the REC START/STOP button, and turn the pinch solenoid ON and OFF, to confirm that the opening is 0.5mm.

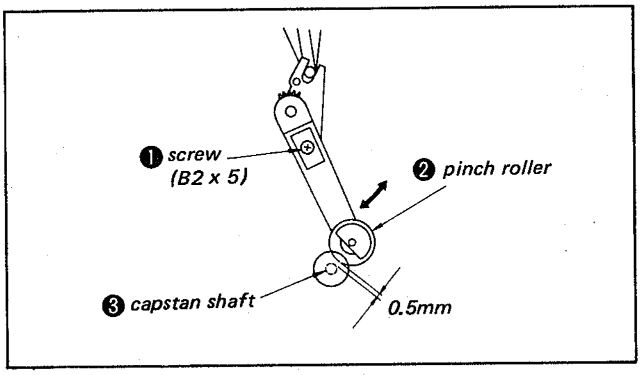

❶ screw (B2 x 5)
❷ pinch roller
❸ capstan shaft
0.5mm

Fig. 3-34

8. Adjustment of the Position of the Tension Regulator Arm

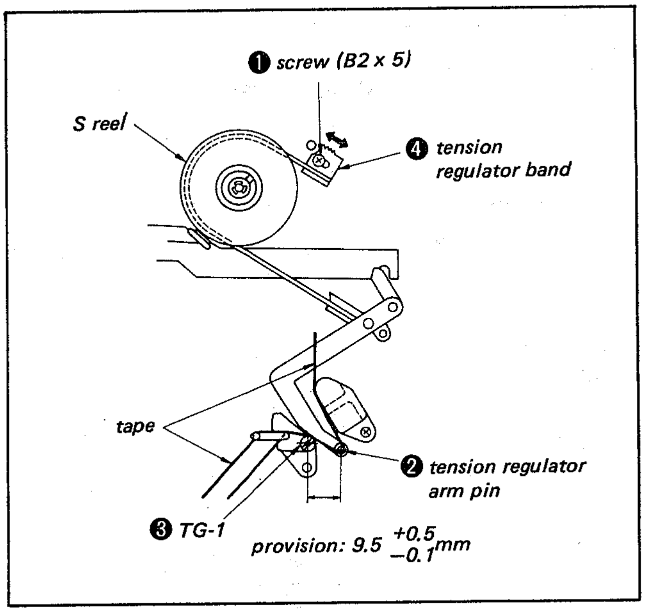

❶ screw (B2 x 5)
S reel
❹ tension regulator band
tape
❷ tension regulator arm pin
❸ TG-1
provision: 9.5 +0.5 −0.1 mm

Fig. 3-35

1) Apply power, and record without a cassette.
2) Loosen the screw ❶ , adjust the center-to-center distance of the tension regulator arm pin ❷ and TG-1 ❸ to about 10.5mm, and temporarily stop the tension regulator band ❹ .
3) Insert a cassette and start to record. Confirm that the abovementioned distance is 9.5 $^{+0.5}_{-0.1}$mm.
4) If this provision is not satisfied, readjust the tension regulator band position ❹ .

9. Adjustment of the FWD Back Tension

1) Set the reel table tension gauge ❶ and run the tape through at 2cm/sec.

Note: Run the tape through so that it is in contact with the outer circumference of the upper drum (rotary drum).

2) Loosen the screw ❷ and adjust the position of the spring retainer ❹ with the sector type gauge (for 50g) ❸ showing 35 to 40g.
3) Tighten the screw ❷ .

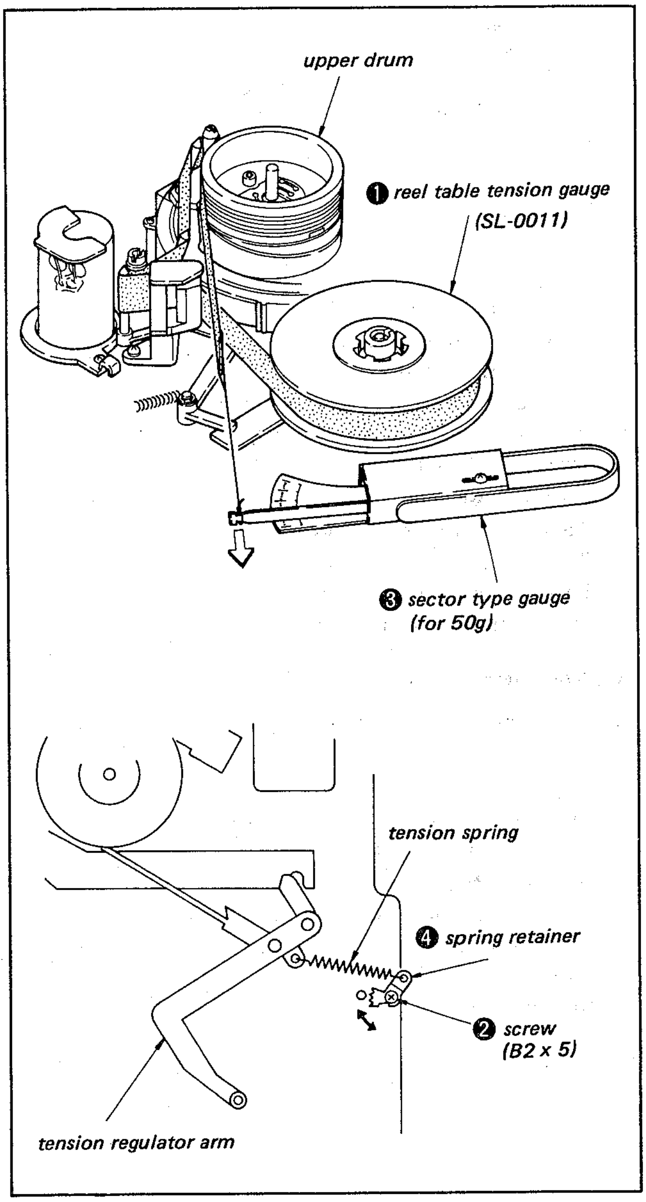

upper drum
❶ reel table tension gauge (SL-0011)
❸ sector type gauge (for 50g)
tension spring
❹ spring retainer
❷ screw (B2 x 5)
tension regulator arm

Fig. 3-36

10. Tape Speed Adjustment

This unit has only a drum servo and no capstan servo. Therefore the tape speed (2cm/sec) is determined by midway pulley (P).

Connection diagram

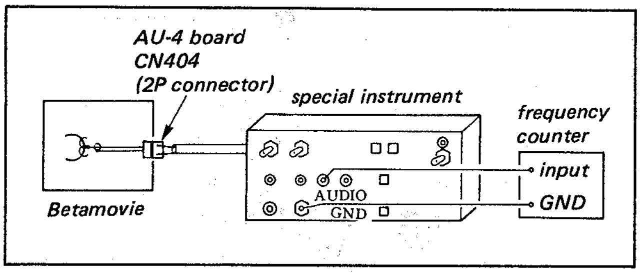

AU-4 board
CN404
(2P connector)
special instrument
frequency counter
input
GND
AUDIO
GND
Betamovie

Fig. 3-37

[Adjustment method]

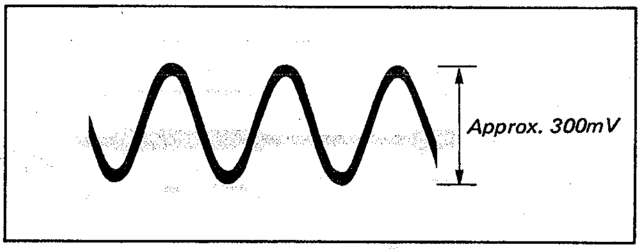
Mode: Playback
Signal: Alignment tape 3kHz signal
Frequency counter: Special instrument AUDIO SIG terminal

1) Playback alignment tape 3kHz (color bar).

Note: If the safety tab of the alignment tape has been removed, cover that section with tape.

2) Correct the frequency counter value.

- Correction method
  The Tape Speed Calibration Value is recorded on the alignment tape.
  *For example, if this value is 0.1%, when the frequency counter shows 2,997Hz, the Speed, i.e. 2cm/sec, is correct.
  *At −0.1%, 3,003Hz is displayed at the correct speed.


Approx. 300mV

Special instrument AUDIO SIG terminal

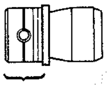
Fig. 3-38

3) Replace the midway pulley (P) to obtain the corrected frequency $^{+6}_{-18}$Hz.

Figure showing diam.
Midway pulley (P): FB6+3-682-740-□□ (0 to 9)
End

		0	1	2	3	4	5	6	7	8	9
Diameter **(Note 1)**	Number	0	1	2	3	4	5	6	7	8	9
	Code		|	||	|||	||||	▌	▌|	▌||	▌|||	▌||||
		Smaller ←——→ Larger									
Tape speed		Slower ←——→ Faster									
Remarks		The frequency changes about 7Hz for a one rank difference in diameter.									

Note 1: Diameter identification



Wide grooves and narrow grooves indicate diameter.

11. Adjustment of AC Head (Audio/CTL)

- Connect the special instrument (signal converter BMCJ-888P) and make the adjustment.

Adjustment terminology

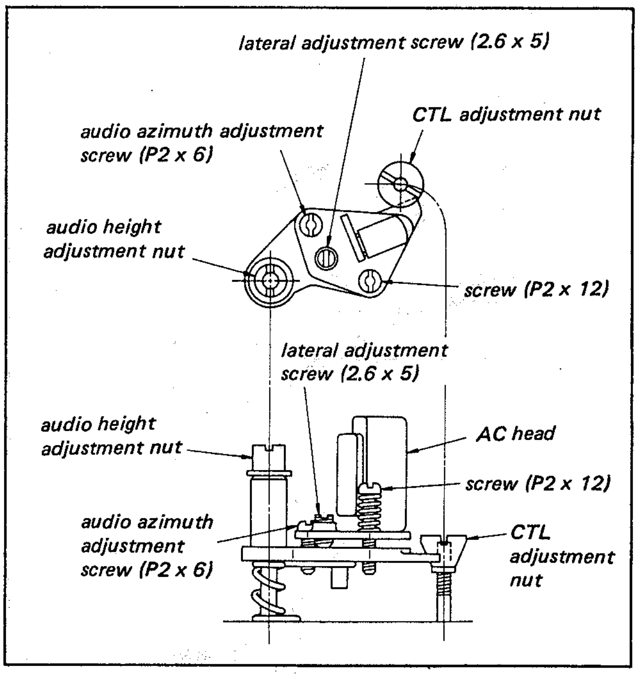
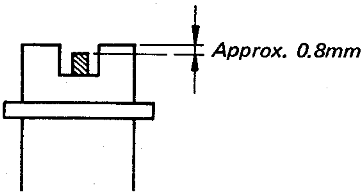

lateral adjustment screw (2.6 x 5)
audio azimuth adjustment screw (P2 x 6)
CTL adjustment nut
audio height adjustment nut
screw (P2 x 12)
lateral adjustment screw (2.6 x 5)
audio height adjustment nut
AC head
screw (P2 x 12)
audio azimuth adjustment screw (P2 x 6)
CTL adjustment nut

Fig. 3-39

[Height adjustment]

1) Turn the audio height adjustment nut and set as shown in the following diagram.


Approx. 0.8mm

2) Play back the 333Hz section of the alignment tape and adjust the audio height adjustment nut to get the maximum output level.
3) Confirm that there is no curling in the No. 7 guide.

[Azimuth adjustment]

1) Play back the 5kHz section on the alignment tape and adjust the audio azimuth adjustment screw to give the maximum output level.
2) Run the tape for a short time to confirm that there is no extensive change in the output level.

[Lateral adjustment]

- **When this adjustment is made, carry out the "height adjustment" and "azimuth adjustment".**

1) Play back the 5kHz section on the alignment tape.
2) Confirm that there is no curling in the No. 7 guide.
3) Turn the lateral adjustment screw until the output level remains unchanged when pressure is applied to the tension regulator arm ❶ in the direction of the arrow.

Note: Adjust the lateral adjustment screw within a range of 45deg.

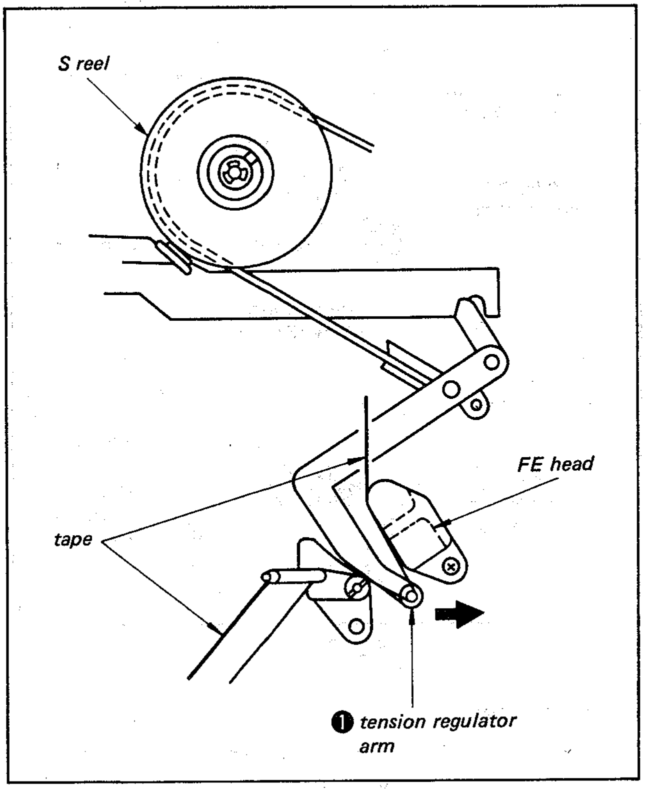


Fig. 3-40

12. Adjustment of the Position of the CTL (AC Head)

- Connect the special instrument (signal converter BMCJ-888P) and carry out the adjustment.

Adjustment terminology

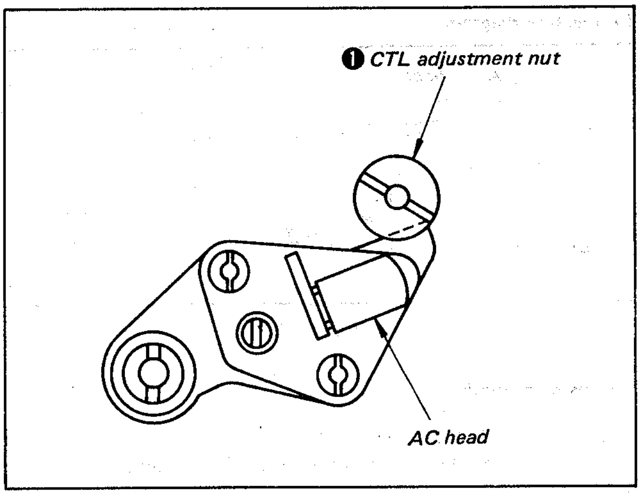


Fig. 3-41

Mode:	Playback
Signal:	Alignment tape tracking signal (KR5-3C is recommended)
* KR5-3C:	This tape is made especially for tracking, and has a recorded time of 40min.
Oscilloscope:	CH-1 RF terminal of special instrument CH-2 TP204 (CTL signal) of SS-17 board

[Adjustment method]

1) Adjust the CTL adjustment nut until the CTL signal and phase are as shown in the following diagram at maximum RF output.

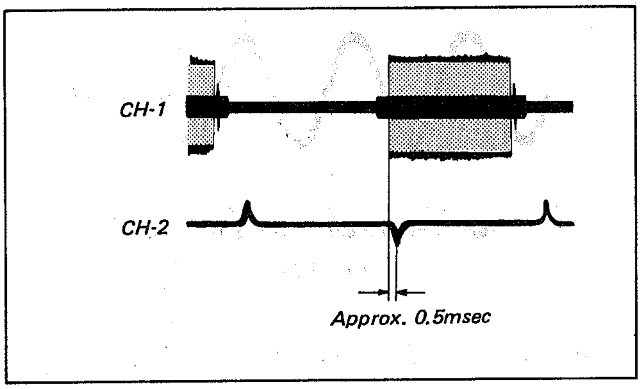


Fig. 3-42

2) Confirm that there is no noise, even when the TRACKING knob on the playback VTR is rotated ±30deg, when the tape being played back on the VTR is a 100% white signal recording made on the Betamovie.

3) If noise occurs, switch from the Betamovie recording →playback on the VTR → recording after turning the CTL adjusting nut on the Betamovie→playback on the VTR.

13. Checking FWD Torque

To measure, FWD torque, set the measuring cassette (SL-0003C) and confirm that the T-reel indicator reaches 40 $^{+10}_{-14}$g·cm.

* If the standard is not met, replace the T reel and check that the value falls within the standards.

3-4. TAPE PATH ADJUSTMENT

This adjustment significantly effects the picture quality in each mode and the interchangeability of the tape, so great care should be taken in carrying it out.

3-4-1. Tracking Adjustment

1. Preparation

1) Connect the special instrument (signal converter BMCJ-888P). (See page 4. Fig. 1-3)
2) Check the tape speed

   This unit does not have a playback servo, so tracking failures can occur periodically, and the RF output level changes. For this reason, the conventional method of adjusting with a TRACKING knob to set at 2/3 of the maximum output level cannot be applied. Therefore, adjustment is made during a change in the RF output level, and it is necessary to first check whether the adjustment is made during an increase or a decrease.

[Checking method]

While looking at the special monitor (converted to f_H=18.75kHz), or while looking at the oscilloscope connected to the RF terminal of the special instrument (BMCJ-888P), touch the capstan flywheel with the fingertips, and change the RF output level.

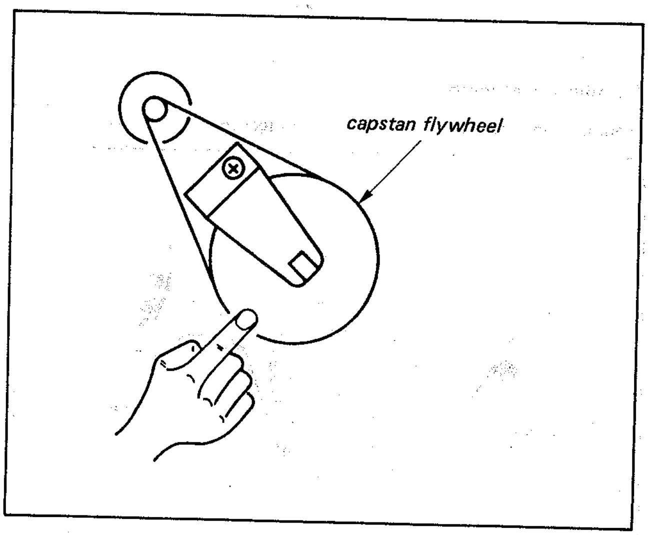


Fig. 3-43

Direction of change	Tape Speed	Adjustment made
Same direction	Slow	During increase
Reverse direction	Fast	During decrease

The same direction is defined as the condition when:

- During an increase, when touching the flywheel, the output level increases.
- Druing a decrease, when touching the flywheel, the output level decreases.

The reverse direction is defined as the condition when:

- During an increase, when touching the flywheel, the output level decreases.
- During a decrease, when touching the flywhee, the output level increases.
- Using the above method, check the tape speed to determine whether the RF output level should be increased or decreased.

3) Check the adjustment level
   Check the maximum value of the RF output level, and adjust to 2/3, or check that level (noting it).

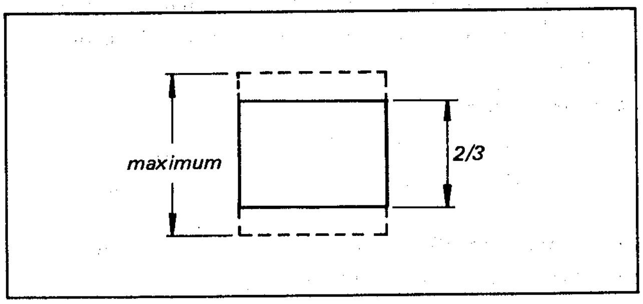


Fig. 3-44

2. Adjustment method

Diagram showing adjustment guide arrangement

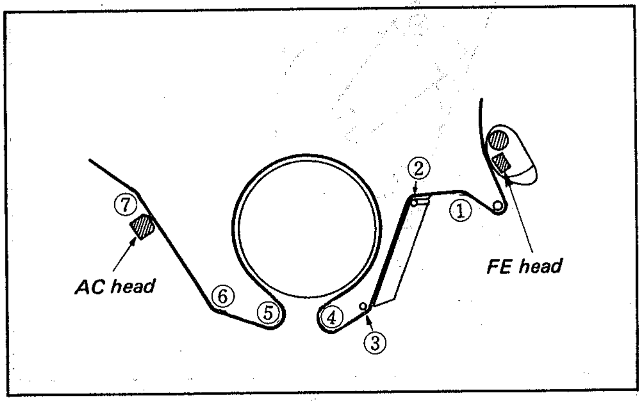

⑦
AC head
⑥
⑤
④
③
②
①
FE head

Fig. 3-45

The tape guides are numbered from No. 1 to No. 7. The role of each is as follows.

Guide No.	Role
No. 1 guide	Vertical regulation
No. 2 & No. 3 guides	Fixed guides (no regulation)
No. 4 & No. 5 guide	Upward regulation
No. 6 guide	Downward regulation
No. 7 guide	Upward regulation

[Rough adjustment]

First make an approximate alignment at the tape entrance and exit side.

1) Rotate No. 6 & No. 7 guides to create a space of 0.2mm between the guides and the tape.
2) Check that there is tape at the lighted section of the FE head (core section).
   If not set No. 1 guide according to Fig. 3-46.

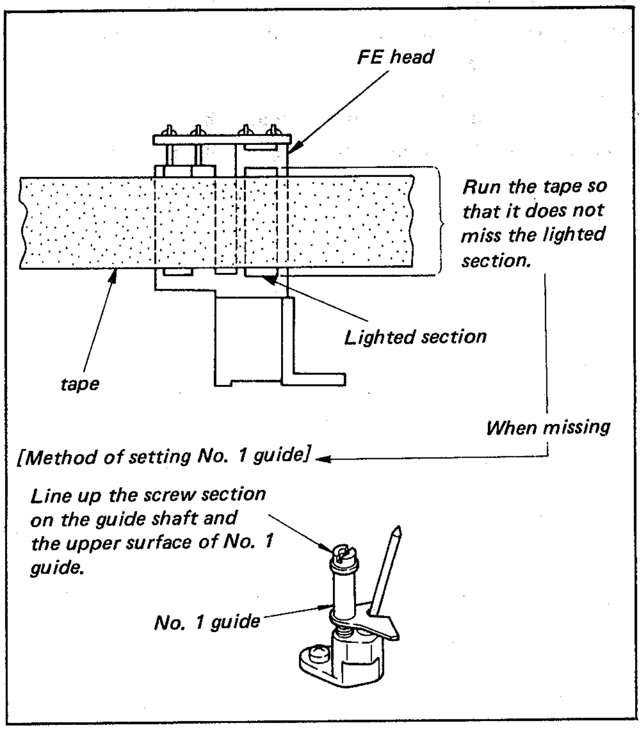

FE head
Run the tape so that it does not miss the lighted section.
Lighted section
tape
When missing
[Method of setting No. 1 guide]
Line up the screw section on the guide shaft and the upper surface of No. 1 guide.
No. 1 guide

Fig. 3-46

[Fine adjustment]

Entrance side adjustment

1) Make the tape as flat as possible at No. 1 and No. 4 guides.
2) Check that there is tape at the lighted section of the FE head (core section).
3) Any curl at No. 1 guide and No. 4 guide must be less than 0.5mm.
4) Set No. 4 guide with the lock screw.

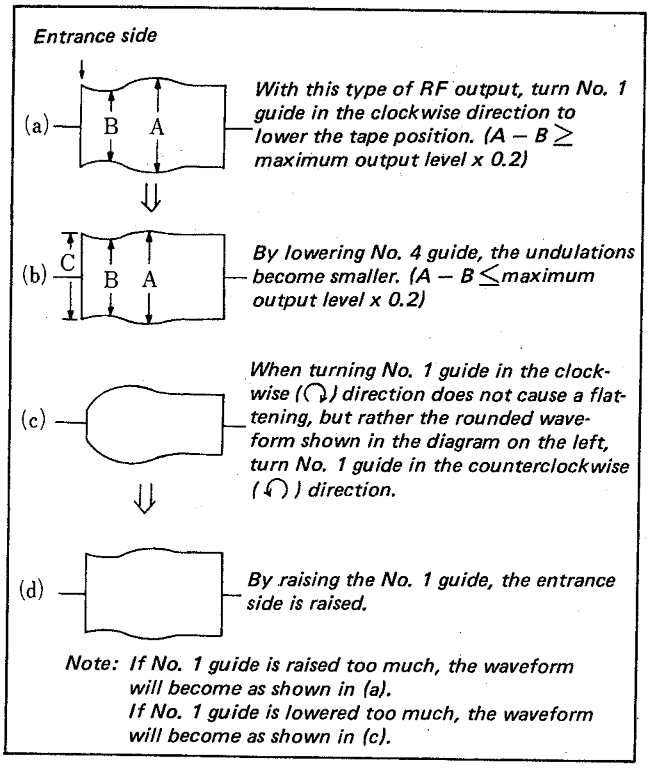

Entrance side
(a)
B
A
With this type of RF output, turn No. 1 guide in the clockwise direction to lower the tape position. (A – B ≥ maximum output level x 0.2)
(b)
C
B
A
By lowering No. 4 guide, the undulations become smaller. (A – B ≤ maximum output level x 0.2)
(c)
When turning No. 1 guide in the clockwise direction does not cause a flattening, but rather the rounded waveform shown in the diagram on the left, turn No. 1 guide in the counterclockwise direction.
(d)
By raising the No. 1 guide, the entrance side is raised.
Note: If No. 1 guide is raised too much, the waveform will become as shown in (a).
If No. 1 guide is lowered too much, the waveform will become as shown in (c).

Fig. 3-47

[Exit side adjustment]

1) Adjust with No. 5 guide to obtain a flat or slightly sagging pattern, then set with the lock screw.
2) Check to see that the tape runs parallel to the upper flange of No. 5 guide.

Note: Any curl must be less than 0.5mm
If the tape does not run parallel to the upper flange, insert a drum spacer as shown in © of Fig. 3-50.

3) Make No. 6 guide parallel to the lower edge of the tape.

Note: There must be no curl.

4) Make No. 7 guide parallel to the upper edge of the tape.

Note: There must be no curl.

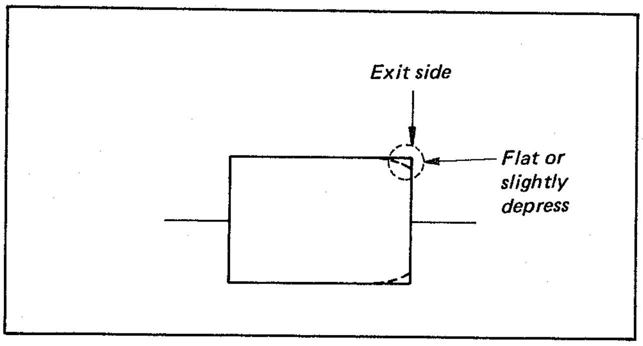

Exit side
Flat or slightly depress

Fig. 3-48

[Standards]

Check the tape speed, and determine whether the check was made with the output level increasing or decreasing, then check at 2/3 of the maximum output level.

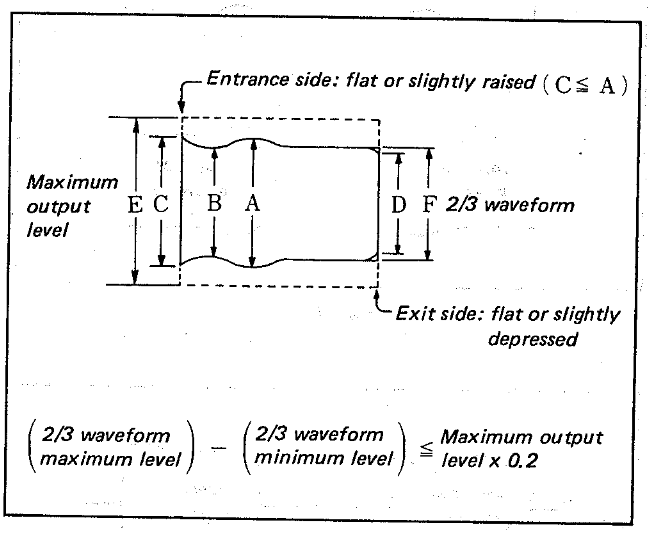

Entrance side: flat or slightly raised (C ≦ A)
Maximum output level
E
C
B
A
D
F
2/3 waveform
Exit side: flat or slightly depressed
(2/3 waveform maximum level) – (2/3 waveform minimum level) ≦ Maximum output level x 0.2

Fig. 3-49

[Outside of standards]

When standards cannot be met by adjusting only No. 1 and No. 4 guides, and No. 5 guide.
Add a drum spacer (thickness 80μ: 3-681-669-01; 40μ: 3-681-669-11) between the drum and the mechanical chassis. First use the 80μ spacer, and if this causes an inclination in the other direction, remove it and insert the 40μ spacer. A maximum of 120μ may be inserted at one position.

Diagram showing locations to insert drum spacers

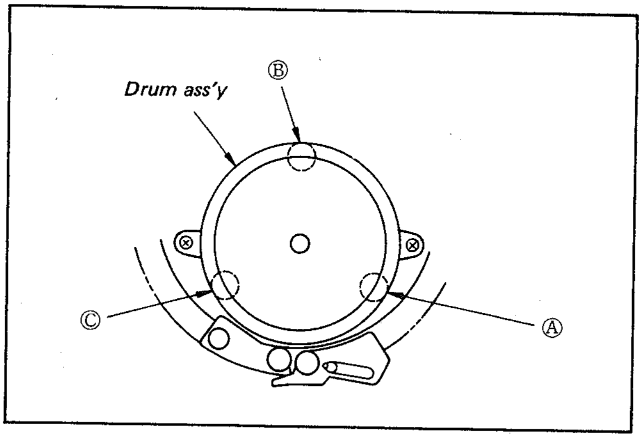


Fig. 3-50

Indications of insertion locations

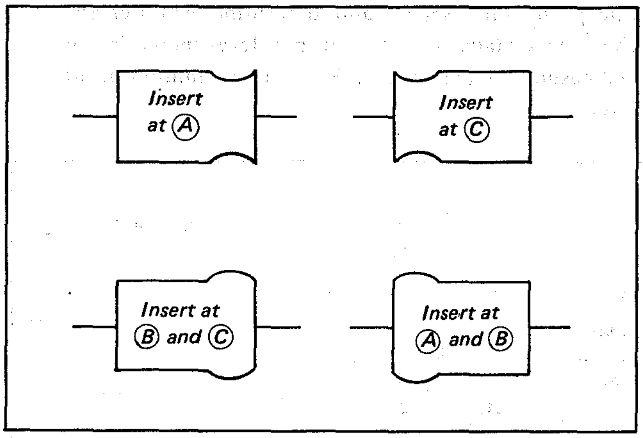

Insert at Ⓐ
Insert at Ⓒ
Insert at Ⓑ and Ⓒ
Insert at Ⓐ and Ⓑ

Fig. 3-51

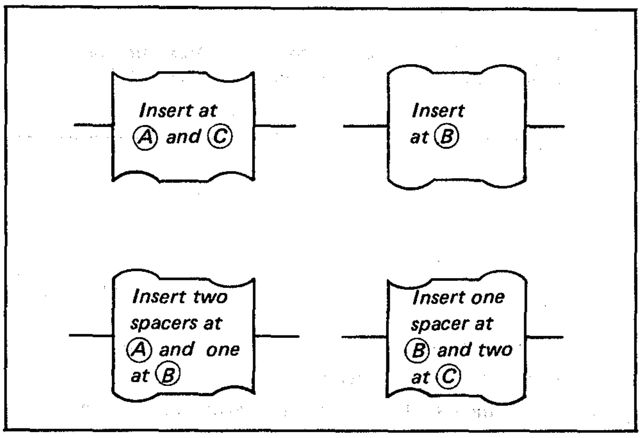

Insert at Ⓐ and Ⓒ
Insert at Ⓑ
Insert two spacers at Ⓐ and one at Ⓑ
Insert one spacer at Ⓑ and two at Ⓒ

Fig. 3-52

SECTION 4
ELECTRICAL ALIGNMENT (VIDEO SECTION)

[Equipment required]

1) Oscilloscope: Dual-trace, bandwidth more than 10MHz with delay mode.
2) Frequency counter.
3) Digital voltmeter.
4) Alignment tape, type KR5-2H and KR5-3C.
5) Pattern box.
6) Audio generator.
7) Audio attenuator.
8) Audio distortion meter.
9) Audio level meter.
10) VTR (For Betamovie camera, because the VTR does not have playback or rewind functions.
11) Signal generator

[Preparatory setup for alignment]

The signal obtained from the camera is used in the alignment of the VTR, so the output signal must be within the specified range.

Verify the video signals by connecting the oscilloscope to TP11 (luminance signal) and TP9 (chroma signal) on the VC-2 board.

1. Connection diagram

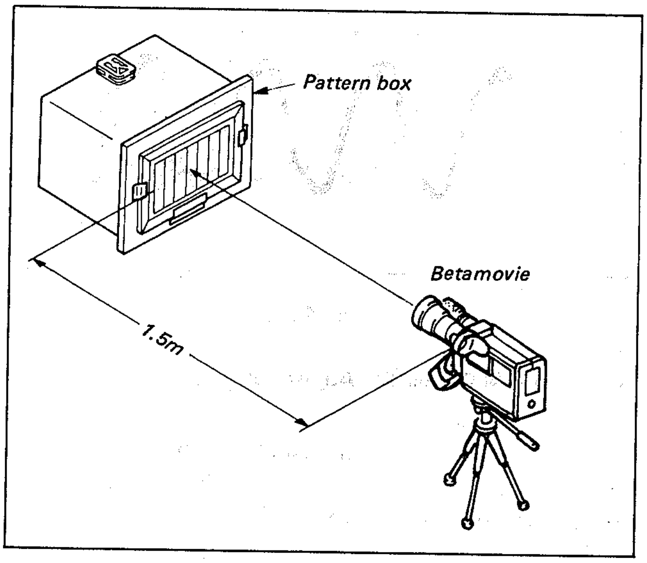

Pattern box
Betamovie
1.5m

Fig. 4-1

2. Align the color bar signal on the monitor as shown in the following diagram.

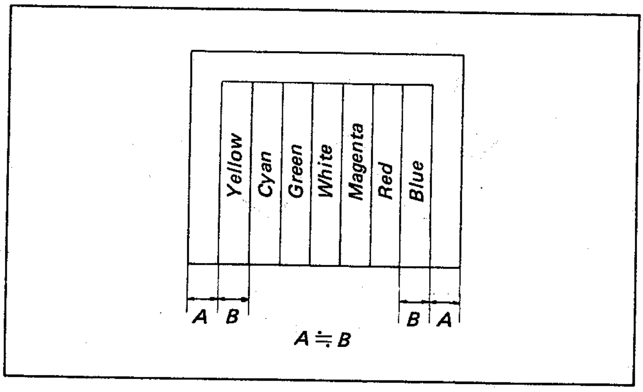

Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
B
A
A ≒ B

Fig. 4-2

3. Signals

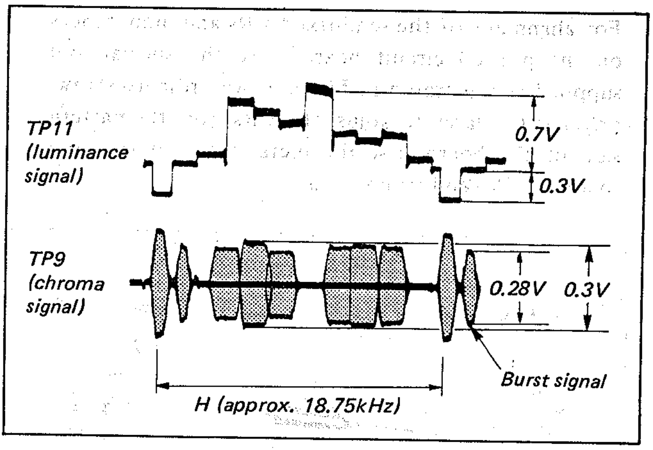

TP11 (luminance signal)
0.7V
0.3V
TP9 (chroma signal)
0.28V
0.3V
Burst signal
H (approx. 18.75kHz)

Fig. 4-3

[Method of eliminating signal from video circuit of VTR]

The luminance signal and the chroma signal supplied from the camera to the VTR via a solder bridge on the VC-2 board. To cut off signals while aligning the video circuit, remove this solder bridge.

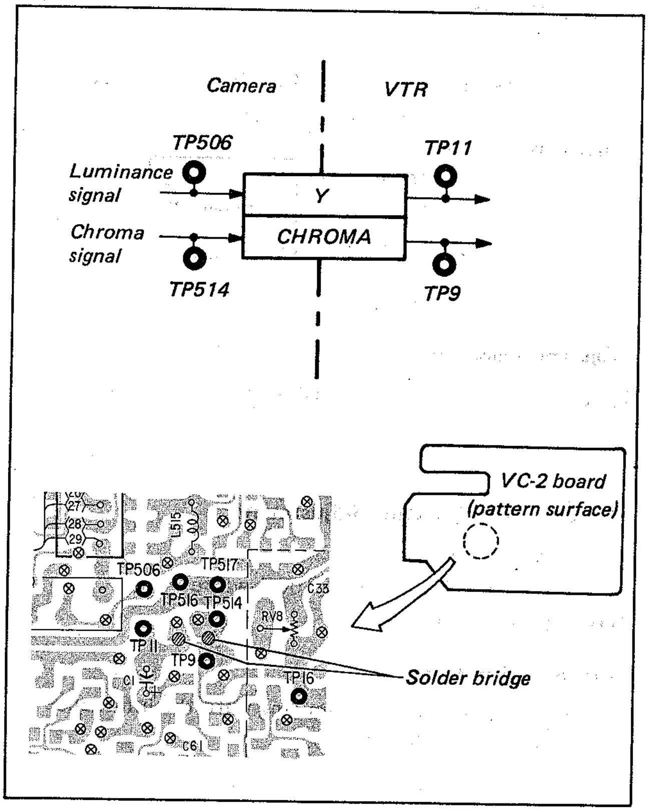
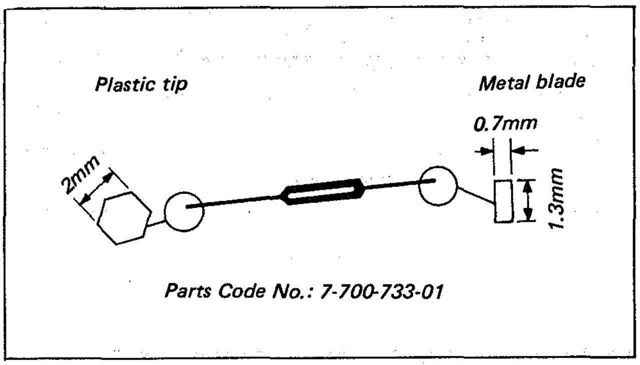

Camera
VTR
TP506
TP11
Luminance signal
Y
Chroma signal
CHROMA
TP514
TP9
VC-2 board (pattern surface)
27
28
29
L515
TP506
TP517
TP516
TP514
C33
RV8
TP11
TP9
TP16
C1
C61
Solder bridge

Fig. 4-4

[Alignment screwdriver]

For alignment of the semi-fixed VRs and inductances on the printed circuit boards, use the special tool supplied as illustrated in Fig. 4-5. An ordinary screwdriver is too large to adjust the VRs from the pattern side of the board. Use the metal blade of the tool to adjust VRs and trimmer capacitors.



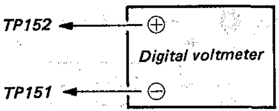
Parts Code No.: 7-700-733-01

Fig. 4-5 Special alignment tool

4-1. VIDEO SYSTEM ALIGNMENT

4-1-1. Compress Adjustment

Mode: Record
Signal: None (solder bridge between TP506 and TP11 removed)
Digital voltmeter:



[Adjustment method]

1) Adjust to 0.3 ± 0.01V with RV152.

4-1-2. Y-FM Deviation Adjustment

Mode: Record
Signal: Pattern box (100% white)
Oscilloscope: TP11

[Adjustment method]

1) Turn the Betamovie zoom ring until the luminance signal on TP11 is 1.2Vp-p.

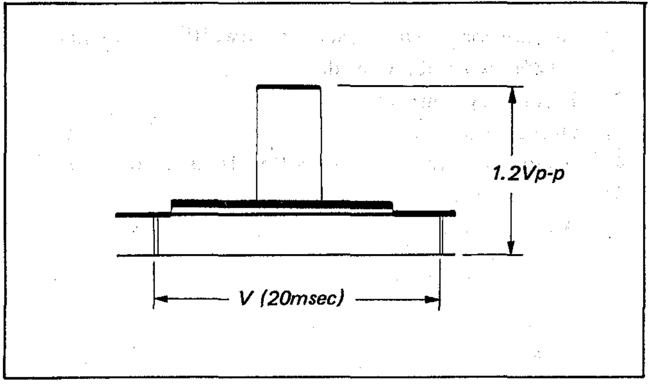


Fig. 4-6

2) Connect the oscilloscope to TP15.
3) Adjust RV156 until the signal is as shown in the following diagram.

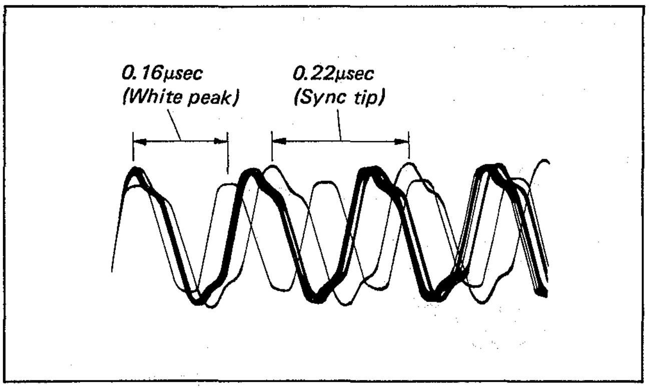


Fig. 4-7

4-1-3. Y-FM Carrier Set Adjustment

Mode: Record
Signal: None (solder bridge between TP506 and TP11 removed)
Frequency counter: TP15

[Adjustment method]

1) Adjust to 4.56 ± 0.04MHz with RV153.

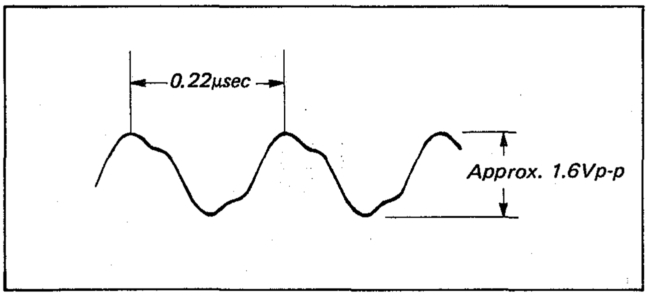
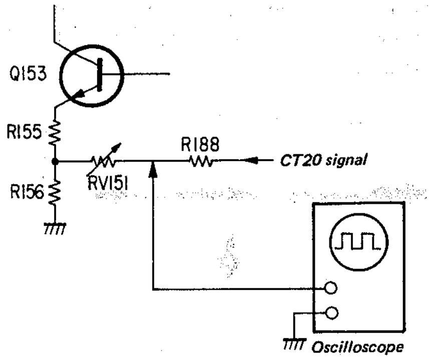


Fig. 4-8

4-1-4. 1/2fH Shift Adjustment

Mode: Record
Signal: None (solder bridge between TP506 and TP11 removed)
Oscilloscope:


Q153
R155
R156
R188
RV151
CT20 signal
Oscilloscope

[Adjustment method]

1) Adjust to 2.5Vp-p with RV151.

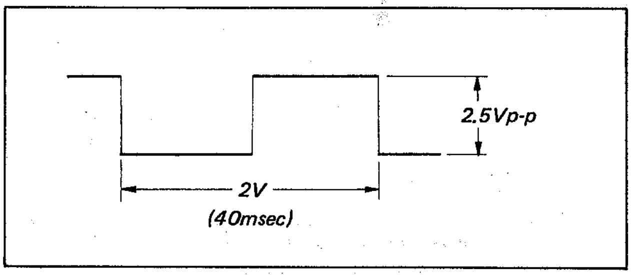

2.5Vp-p
2V
(40msec)

Fig. 4-9

4-1-5. Dark Clip Adjustment

Mode: Record
Signal: None (solder bridge between TP506 and TP11 removed)
Frequency counter: TP15

[Adjustment method]

1) Connect Q1 base to TP10 (GND).
2) Adjust to 2.96 ± 0.03MHz with RV154.

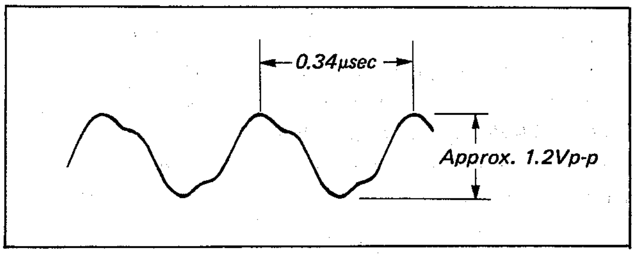

0.34μsec
Approx. 1.2Vp-p

Fig. 4-10

4-1-6. White Clip Adjustment

Mode: Record
Signal: None (solder bridge between TP506 and TP11 removed)
Frequency counter: TP15

[Adjustment method]

1) Connect the base of Q1 to TP8 (+9V) with a 1.5kΩ resistor.
2) Adjust to 8.13 ± 0.03MHz with RV155.

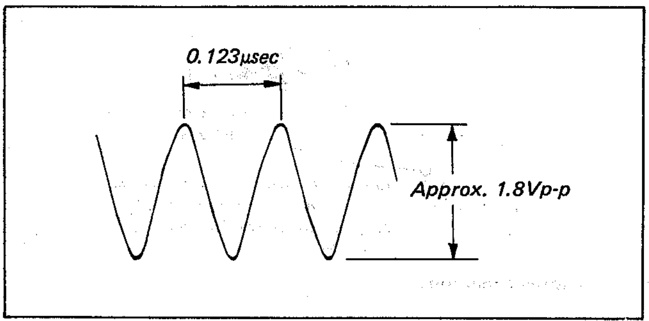

0.123μsec
Approx. 1.8Vp-p

Fig. 4-11

4-1-7. Y-FM Record Current Adjustment

Mode: Record
Signal: None (solder bridge between TP506 and TP11 removed)
Oscilloscope: TP15

[Adjustment method]

1) Adjust to 1.24 ± 0.04Vp-p with RV7.

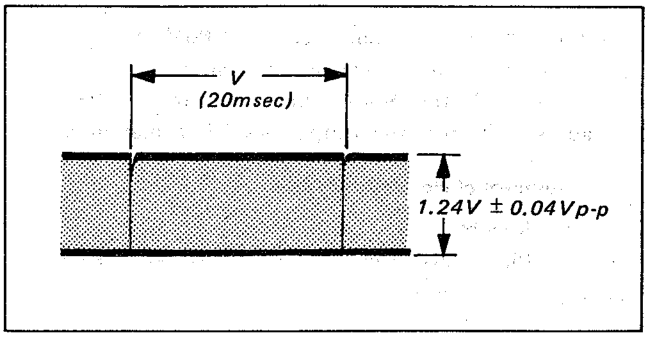

V
(20msec)
1.24V ± 0.04Vp-p

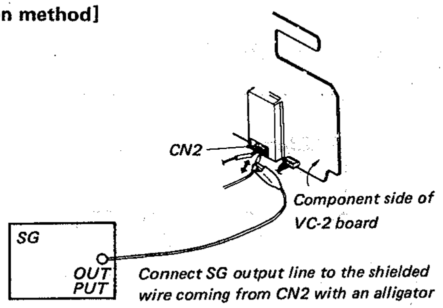
Fig. 4-12

4-1-8. Clog Detection Adjustment

1. Adjustment of playback frequency characteristics

Mode: Playback (short pins ② and ④ of CN307 on SS-17 board)
Signal: Connect signal generator (SG) as shown below.
Oscilloscope: TP13

[Connection method]



Connect SG output line to the shielded wire coming from CN2 with an alligator clip, etc., and set the SG frequency to 5 – 6MHz.

[Adjustment method]

1) Adjust SG output level until TP13 output level is 100 – 200mVp-p.

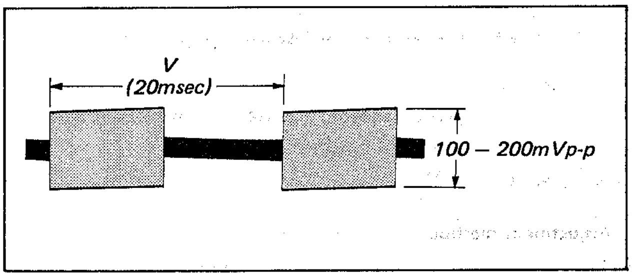


Fig. 4-13

2) With the SG frequency set to 5.06MHz, adjust L7 until the output level is a maximum.
3) Then, with the SG frequency set to 6.24MHz, adjust L8 until the output level is a maximum.

2. Adjustment of clog detection level

Mode: Record
Signal: Black level (lens covered with black paper)
Oscilloscope: TP15

[Adjustment method]

1) Adjust RV7 until the output level at TP15 is 290mVp-p, and record.

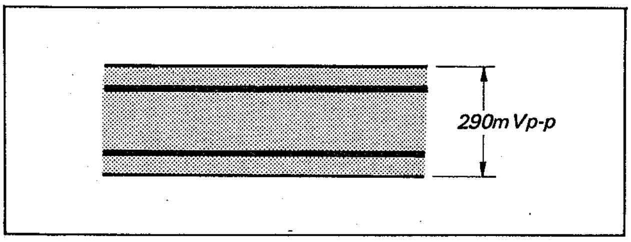
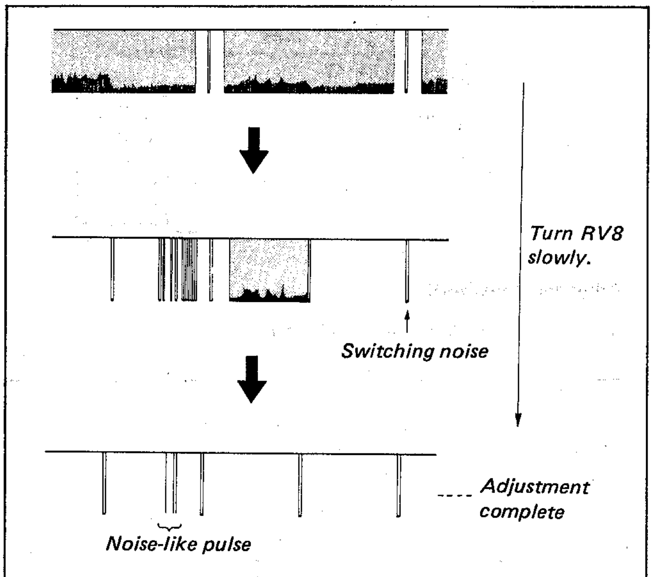


Fig. 4-14

2) Connect the oscilloscope to TP14.
3) Playback the recorded signal. (Short pins ② and ④ of CN307 on SS-17 board to get the playback mode.)
4) Turn RV8 fully clockwise (↻), as viewed from the pattern side, then, slowly turn it counterclockwise (↺) until the state shown in Fig. 4-15 is attained.



Note: Adjust RV8 so several noise-like pulses somtimes appear between switching noises.

Fig. 4-15

5) With the recording current (TP15 output level) remaining at 290mVp-p, repeatedly press the REC START/STOP button 40 times, and make sure that the CAUTION lamp flickers each time.

Note:
- Clog detection takes place when the STAND-BY mode is changed over to the RECORD mode.
- To turn off the flickering CAUTION lamp, either turn off the POWER switch or eject the cassette.

6) Then, adjust the recording current to 460mVp-p with RV7, repeatedly press the REC START/STOP button 40 times, and make sure that the CAUTION lamp does not flicker at all.
7) If 5) and 6) are not satisfied, finely adjust RV8.
8) After the adjustment is completed, return RV7 to the original position. (Refer to 4-1-7. Y-FM Record Current Adjustment.)

4-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

4-2-1. Battery Power-off Voltage Adjustment (SS-17 board)

Mode: Record
Constant voltage power supply: External power input
Digital voltmeter: J901 (JK-2 board) ⊕ terminal

[Adjustment method]

1) Adjust the power supply voltage until the digital voltmeter reads 9.6V dc.
2) Turn RV301 fully clockwise (↻).
3) Put into recording mode.
4) Adjust the power supply voltage until the digital voltmeter reads 9.0V dc.
5) Turn RV301 slowly counterclockwise (↺), and stop where the camera is shut off automatically.

Note: When the Betamovie is automatically shut off because of low supply power voltage, only the EJECT function will operate. To continue the adjustment, cut the power momentarily and after the voltage returns to its original value, turn on again.

[Checking method]

1) Adjust the power supply voltage until the digital voltmeter reads 9.6V dc.
2) Put into recording mode.
3) Slowly lower the power supply voltage, and make sure that, as the digital voltmeter reading drops to 9.10 – 9.35V dc, the CAUTION lamp flickers at 1Hz.
4) Further lower the power supply voltage, and make sure that the automatic shut-off operates when the digital voltmeter reading drops below 9.0 ± 0.1V dc.

4-3. SERVO SYSTEM ADJUSTMENT

4-3-1. Drum Speed Adjustment

Mode: Record
Oscilloscope: TP203 (pin ⑩ of IC201)
(or digital voltmeter)

[Adjustment method]

Adjust to 3.3 ± 0.2V dc with RV202.

4-3-2. Drum Phase Adjustment

Mode: Record
Oscilloscope: CH1 TP201 (pin④of IC201)
CH2 TP202 (pin⑨of CN313)

[Adjustment method]

Adjust to 0 ± 30μsec with RV201. (See Fig. 4-16)

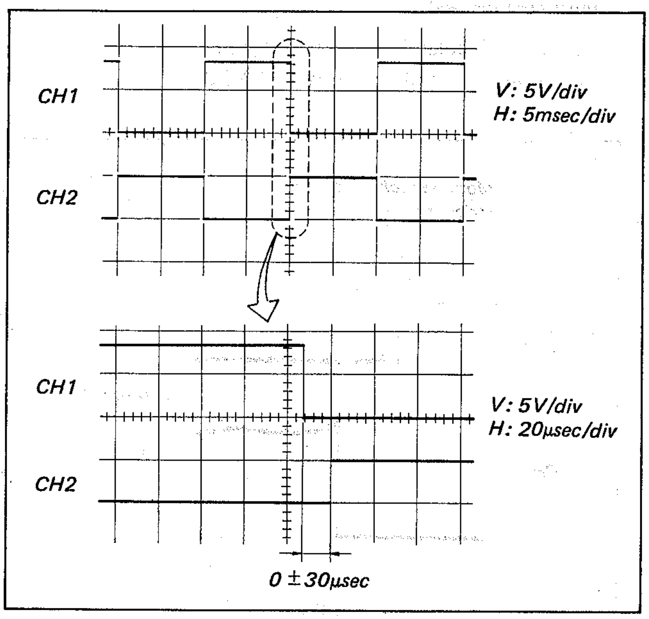


Fig. 4-16

4-3-3. Servo Lock Check

Mode: Standby
Oscilloscope: CH1 Pin⑥of IC201
CH2 Pin⑦of IC201

[Checking method]

Lock so that the waveforms of CH1 and CH2 are as shown in Fig. 4-17.

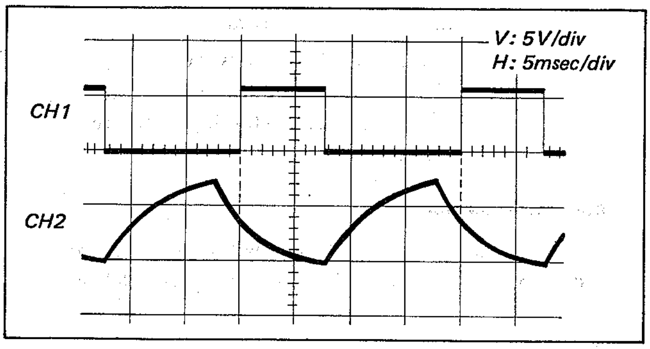


Fig. 4-17

4-3-4. Edit Adjustment

Carry out adjustments **1** through **5** given below. If adjustments **4** and **5** are not satisfied, a clear edit cannot be obtained.

1. Pinch-on delay adjustment

Mode: Standby ⟶ record
Oscilloscope: CH1 TP301
CH2 TP302
Trigger CH1
Trigger slope ⊖ (negative)
Sweep mode NORM ····· Adjust the trigger level until a waveform appears on the oscilloscope when changed over from standby to record mode.

[Adjustment method]

1) Adjust the delay time for switching from standby to record to 5 ± 0.5msec with RV302.

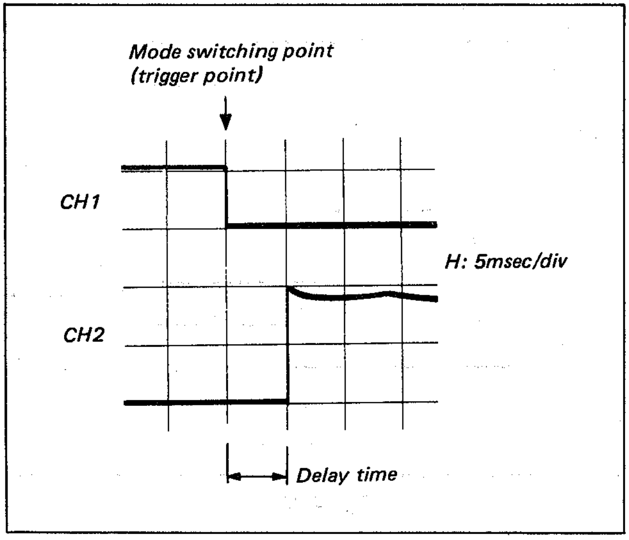

Mode switching point
(trigger point)
CH1
H: 5msec/div
CH2
Delay time

Fig. 4-18

2. Pinch-off delay adjustment

Mode: Standby⟷ record
Oscilloscope: CH1 TP303
CH2 TP304
Trigger CH1
Trigger slope ⊖ (negative)
Sweep mode NORM ····· Adjust the trigger level until a waveform appears on the oscilloscope when changing over between standby and record mode.

[Adjustment method]

1) Adjust the delay time for switching over from standby to record to 12 ± 0.5msec with RV303.

2) Make " **5. Playback CTL Phase Adjustment** ".

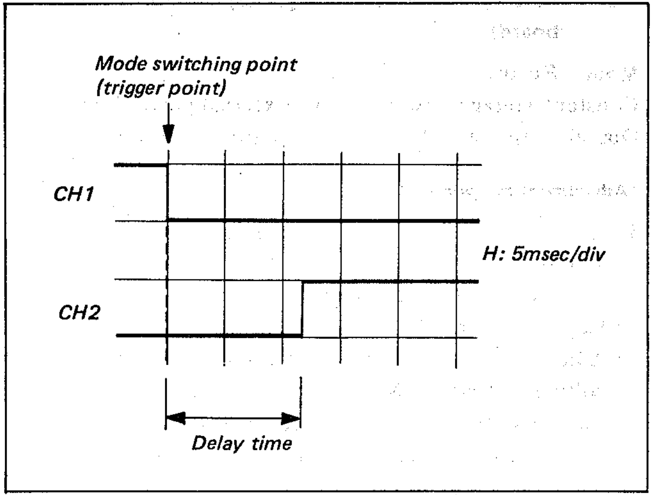

Mode switching point
(trigger point)
CH1
H: 5msec/div
CH2
Delay time

Fig. 4-19

3. Brake-on delay adjustment

Mode: Standby⟷ record
Oscilloscope: CH1 TP307
CH2 TP308
Trigger CH1
Trigger slope ⊖ (negative)
Sweep mode NORM ····· Adjust the trigger level until a waveform appears on the oscilloscope when switching over between standby and record.

[Adjustment method]

1) Adjust the delay time for switching over from standby to record to 12 ± 0.5msec with RV305.

2) Carry out " **5. Playback CTL Phase Adjustment** ".

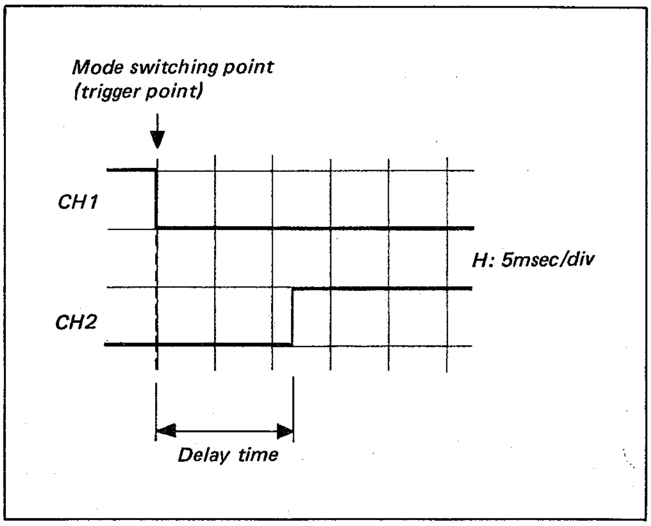

Mode switching point
(trigger point)
CH1
H: 5msec/div
CH2
Delay time

Fig. 4-20

4. Brake-off delay adjustment

Mode: Standby ⟶ record
Oscilloscope: CH1 TP305
CH2 TP306
Trigger CH1
Trigger slope ⊖ (negative)
Sweep mode NORM ····· Adjust the trigger level until a waveform appears on the oscilloscope when switching from standby to record.

[Adjustment method]

1) Adjust the delay time for switching from standby to record to 17 ± 0.5msec with RV304.

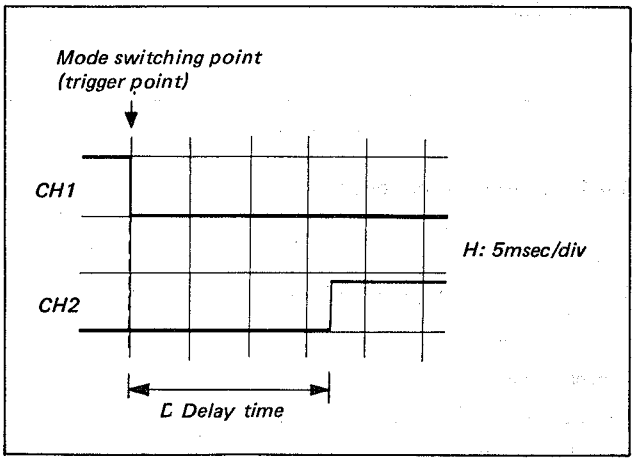


Fig. 4-21

5. Playback CTL phase adjustment

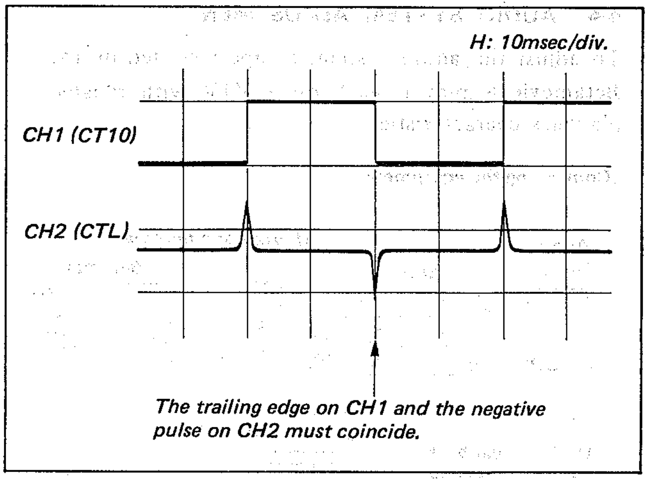
Make this adjustment accurately as inaccuracy causes noise on the edited tape.

Mode: Standby ⟶ playback
Oscilloscope: CH1 Pin ⑩ of CN509 on VC-2 board (CT10 signal)
CH2 TP204 on SS-17 board (CTL signal)
Signal: Recorded tape

[Adjustment method]

1) When the mode is switched over from STANDBY to PLAYBACK, a solenoid actuating noise is heard three times. Check that the CTL signal position at the 3rd actuation is as shown in Fig. 4-22. The CTL signal position shifts, so switch-over between STANDBY and PB several times and take the center of the range of CTL positions for checking.

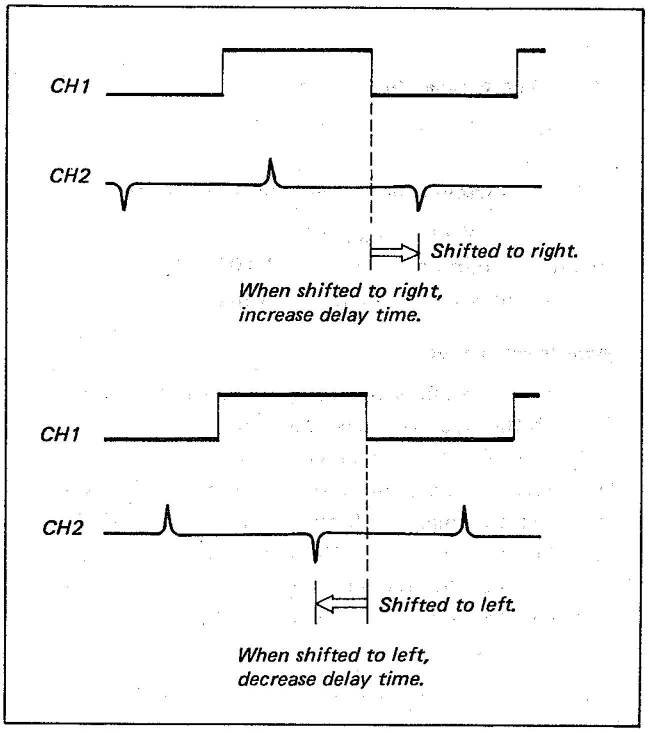
Note: The CTL signal shifts right and left because there is no playback servo. For this reason, check at the 3rd actuation.



The trailing edge on CH1 and the negative pulse on CH2 must coincide.

Fig. 4-22

2) If the pulses do not match as shown, carry out "**2. Pinch-off delay adjustment**" and "**3. Brake-on delay adjustment**" again. Ensure that the delay time for the two adjustments is equal.



When shifted to right, increase delay time.

When shifted to left, decrease delay time.

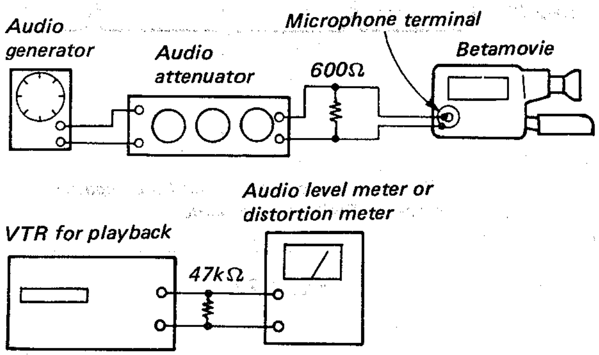
Fig. 4-23

3) When the delay times are not between 10 and 20msec, check "**3-3-2. 7. Pinch roller position adjustment**".

4-4. AUDIO SYSTEM ADJUSTMENT

To adjust the audio system, a tape recorded by the Betamovie is played back on a VTR with reliable playback characteristics.

[Connecting the equipment]



Note: The playback VTR must have had its audio head azimuth and the audio playback system (playback frequency characteristics and playback level) adjusted.

4-4-1. Audio Head Adjustment

See "MECHANICAL ADJUSTMENT".

4-4-2. Bias Oscillation Frequency Adjustment

Mode: Record
Frequency counter: Pin①of CN404
Oscilloscope: Pin①of CN404

[Adjustment method]

1) With the oscilloscope only connected to pin ① of CN404, read the bias signal level.
2) Turn RV403 fully clockwise (↻).
3) Connect the frequency counter to pin①of CN404.
4) Adjust the bias oscillation frequency to 67.7 – 70.0kHz or 60 – 64.5kHz with T401.
5) Disconnect the frequency counter.
6) Adjust the bias signal level to the level read in 1) with RV403.

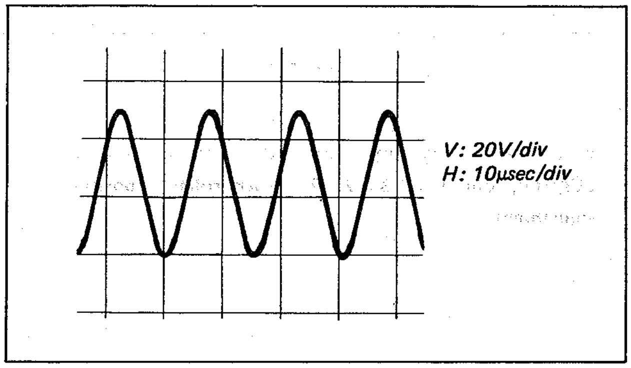


Fig. 4-24

4-4-3. Bias Leak Check (AU-3 board)

Mode: Record
Input signal: None
Oscilloscope: TP410

[Checking method]

1) Make sure that the bias leak is below 500mV.

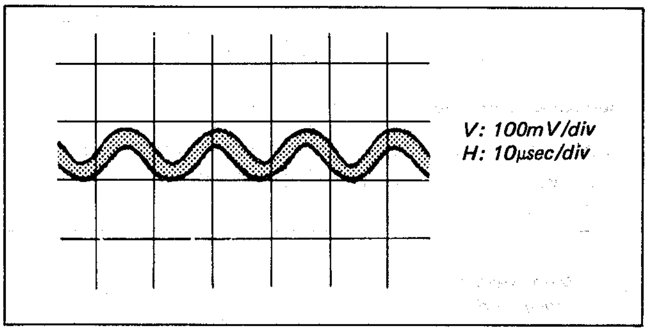


Fig. 4-25

4-4-4. Output Level Check

Mode: Record
Input signal: 333Hz, –50dB
Level meter: Earphone terminal (load impedance greater than 1kΩ)

[Checking method]

1) The output level at the earphone terminal must be –4 ± 1.5dB.

4-4-5. Record Bias Current Adjustment (AU-4 board)

Mode: Record and playback
Input signal: 333Hz, –80dB and 7kHz, –80dB
Level meter: Audio output terminal of playback VTR

[Adjustment method]

1) Record 333Hz, signals at –80dB.
2) Record 7kHz, signals at –80dB.
3) Playback the recorded tape on the playback VTR, and measure the ratio of the 7kHz output level to the 333Hz output level.

Standard: The 7kHz output level should be 0 ± 1dB relative to the 333Hz output level.

4) If the standard requirement is not met, turn RV403 as below, and repeat adjustments 1) through 3).

7kHz output level	RV403 adjustment
Low	Clockwise (↻)
High	Counterclockwise (↺)

4-4-6. Recording Level Adjustment (AU-3 board)

Mode: Record and playback
Input signal: 333Hz, −50dB
Level meter recording: TP410
Level meter playback: Playback VTR audio output terminal

[Adjustment method]

1) Put in the recording mode, and note the TP410 signal level. (approx. −8dB)
2) Playback the recorded tape on the playback VTR, and check the playback output level.

Standard: −10dB*[1] or −5dB*[2]

3) If the standard is not met, adjust the TP410 signal level with RV401, to correct the error and repeat 1) and 2).

*[1] When playback VTR audio output level is −10dB.
*[2] When playback VTR audio output level is −5dB.

4-4-7. Distortion Check

Mode: Record and playback
Input signal: 333Hz, −50dB
Distortion meter: Audio out terminal of playback VTR

[Adjustment method]

1) Make a recording
2) Playback the recorded tape on the playback VTR, and check the distortion.

Standard: 4% maximum

4-4-8. S/N Ratio Check

Mode: Record and playback
Input signal: 333Hz, −50dB and no signal
Level meter: Audio out terminal of playback VTR

[Adjustment method]

1) Record 333Hz, −50dB signals.
2) Record with no signal.
3) Playback the recorded tape on the playback VTR, and measure the ratio between the signal level (333Hz) and the noise level (no signal).

Standard: Greater than 35dB.